# CableFast Cabling

E

## At a Glance

**Introduction**

The following information pertains to the CableFast cabling system.

**What's in this Chapter?**

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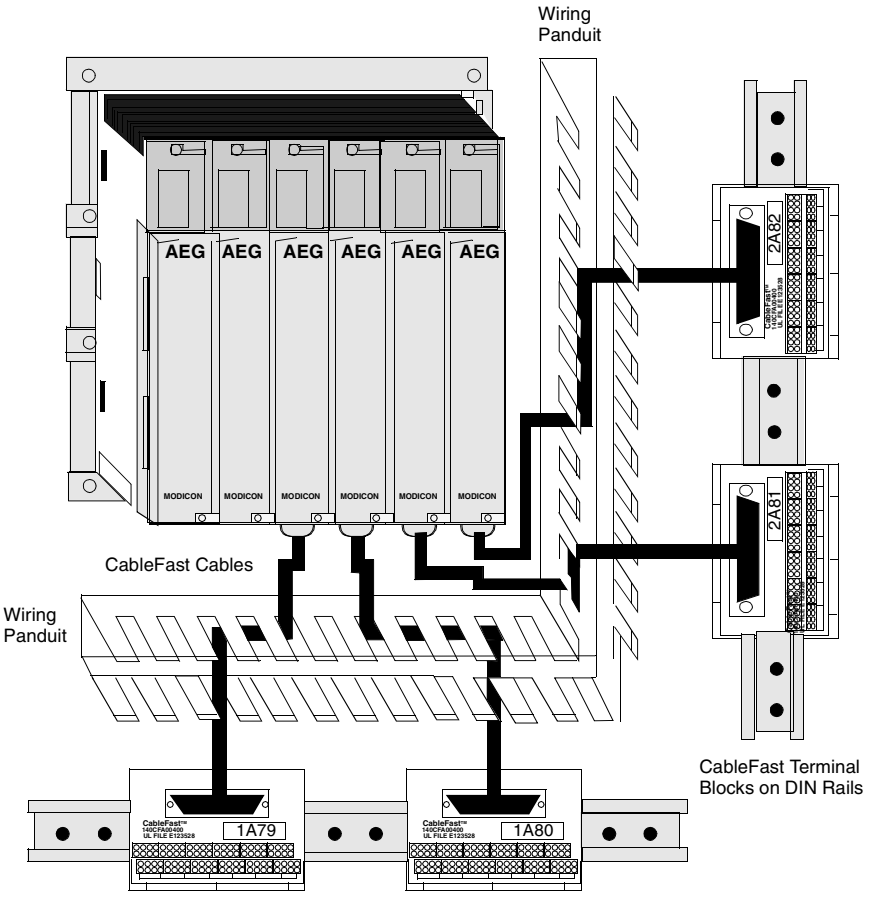
## Features of the CableFast Cabling System

**Overview**

The CableFast wiring system consists of pre-wired Quantum field wiring terminal strips, available in various cable lengths that are terminated with "D" type connectors. The "D" connectors plug into DIN rail-mounted terminal blocks offered in straight through or special application versions. Cables and terminal blocks are ordered separately and all terminal blocks may be used with any cable length. Pigtail cable versions are also available.

## Quantum Modules and Backplane

The following figure shows the Quantum modules and backplane components.




**Note:** Ensure that the wiring panduits are large enough to support 12 ft. cables.

## Specifications

All CableFast systems are designed to the following specifications.

| Specifications | |
|---|---|
| **Power Ratings** | 150 Vac/Vdc @ 0.5 A per point |
| | 150 Vac/Vdc @ 2.0 A per point *<br>*Requires the 140CFG01600 Terminal Block and the 140XTS012XX Cable |
| **Dielectric Withstanding Voltage** | 1060 Vac and 1500 Vdc |
| **Creepage and Clearance** | per IEC 1131, UL 508, CSA 22.2 #142-1987 |
| **Terminal Block Wire Sizes per Terminal** | One wire - #12 AWG (2.5 mm2) |
| | Two wires - #16 AWG (1.0 mm2) and above (See below for the maximum number of wires allowed per terminal.) |
| | Note: It is recommended that no more than two wires be used at one time. |
| | Wire Size — Number of Wires |
| | #24 — 4<br>#22 — 4<br>#18 — 3<br>#16 — 2<br>#14 — 1<br>#12 — 1 |
| **Terminal Screw Size** | M3 |
| **Screwdriver Head Size** | 0.13" (3.3 mm) flat head min. |
| **Terminal Screw Type** | Captive |
| **Terminal Screw Finish** | Tin plate (197 µin min.) |
| **Terminal Screw Tightening Torque** | 7.2 lb.-in (0.8 Nm) |
| **System Flammability Rating** | 94 V-2 |
| **Temperature** | |
| Operating | 0 ... 60° C (32 ... 140° F) |
| Storage | -40 ... +65° C (-40 ... +149° F) |
| **Humidity** | 0 ... 95% RH noncondensing |
| **Altitude** | 6,666 ft. (2000 m) full operation |
| **Shock** | +/- 15 g peak, 11 ms, half sine wave |
| **Vibration** | 10 ... 57 Hz @ 0.075 mm displacement<br>57 ... 150 Hz @ 1 g, total 10 sweeps |
| **Mounting Configuration** | DIN rail mount, NS35/7.5 and NS32 |

**Terminal Block Selection Guide** Use this table to select valid combinations of Quantum I/O modules and CableFast terminal blocks.

| | 140CFA04000 | 140CFB03200 | 140CFC03200 | 140CFE03200 | 140CFE03200 | 140CFG01600 | 140CFH00800 | 140CFI00800 | 140CFJ00400 | 140CFK00400 |
|---|---|---|---|---|---|---|---|---|---|---|
| **140ACI03000** | X | | | | | | X | X | | |
| **140ACO02000** | X | | | | | | | | X | X |
| **140ACI04000** | X | | | | | | | | | |
| **140ACO13000** | X | | | | | | | | | |
| **140ARI03010** | X | | | | | | | | | |
| **140ATI03000** | X (See Note 3) | | | | | | | | | |
| **140AMM09000** | X | | | | | | | | | |
| **140AVI03000** | X | | | | | | X | X | | |
| **140AVO02000** | X | | | | | | | | | X |
| **140DAI34000** | X | | | | | X | | | | |
| **140DAI35300** | X | X | X | X | | | | | | |
| **140DAI44000** | X | | | | | X | | | | |
| **140DAI45300** | X | X | X | X | | | | | | |
| **140DAI54000** | X | | | | | X | | | | |
| **140DAI54300** | X | | | | | | | | | |
| **140DAI55300** | X | X | X | X | | | | | | |
| **140DAI74000** | CableFast Not Allowed | | | | | | | | | |
| **140DAI75300** | CableFast Not Allowed | | | | | | | | | |
| **140DAM59000** | X (See Note 1) | | | | | | | | | |
| **140DAO84000** | | | | | | X (See Note 2) | | | | |
| **140DAO84010** | | | | | | X (See Note 2) | | | | |
| **140DAO84210** | | | | | | X (See Note 2) | | | | |
| **140DAO84220** | | | | | | X (See Note 2) | | | | |

| | 140CFA04000 | 140CFB03200 | 140CFC03200 | 140CFE03200 | 140CFE03200 | 140CFG01600 | 140CFH00800 | 140CFI00800 | 140CFJ00400 | 140CFK00400 |
|---|---|---|---|---|---|---|---|---|---|---|
| **140DAO85300** | X (See Note 1) | | | | | | | | | |
| **140DDI15310** | X | | X | | | | | | | |
| **140DDI35300** | X | X | X | | | | | | | |
| **140DDI35310** | X | | | | | | | | | |
| **140DDI36400** | Not compatible with CableFast. See *140DDI36400 I/O DC Input 24 VDC 6x16 Telefast Input Module, p. 650* for recommended cables | | | | | | | | | |
| **140DDI67300** | X | | | | | | | | | |
| **140DDI84100** | X | | | | | | | | | |
| **140DDI85300** | X | X | X | X | | | | | | |
| **140DDM39000** | X | | | | | | | | | |
| **140DDM69000** | X (See Note 1) | | | | | | | | | |
| **140DDO15310** | X | | | | | | | | | |
| **140DDO35300** | X | | X | | X | | | | | |
| **140DDO35301** | X | | X | | X | | | | | |
| **140DDO35310** | X | | | | | | | | | |
| **140DDO36400** | Not compaitble with CableFast. See *140DDO36400 I/O DC Output 24VDC 6x16 Telefast Output Module, p. 729* for recommended cables. | | | | | | | | | |
| **140DDO84300** | | | | | | X (See Note 2) | | | | |
| **140DDO88500** | X (See Note 1) | | | | | | | | | |
| **140DRA84000** | X (See Note 1) | | | | | | | | | |
| **140DRC83000** | X (See Note 1) | | | | | | | | | |
| **140DSI35300** | X | | | | | | | | | |
| **140DVO85300** | X | | | | | | | | | |
| X = Valid Selections. | | | | | | | | | | |

**Note:** These are the maximum load current capacities of the 140CFA04000 and CFG01600 terminal blocks:

1. When using the 140CFA04000 terminal block, the indicated module outputs are limited to 0.5 A per point, 150 Vac maximum and 0.5 A per point, 150 Vdc maximum.
2. When using the 140CFG01600 terminal block and either the 140XTS012xx or 140XTS102XX high power cables, the indicated module output ratings are 2 A per point, 150 Vac maximum, and 2 A per point, 150 Vdc maximum.
3. The 140CFA04000 block does not incorporate an isometric barrier and is not recommended for use with the 140ATI03000 TC module. Without such a barrier, temperature readings may vary up to 2 degrees from one end of the block to the other. If the application can tolerate this temperature error, the block (and module remote CJC) may be used.

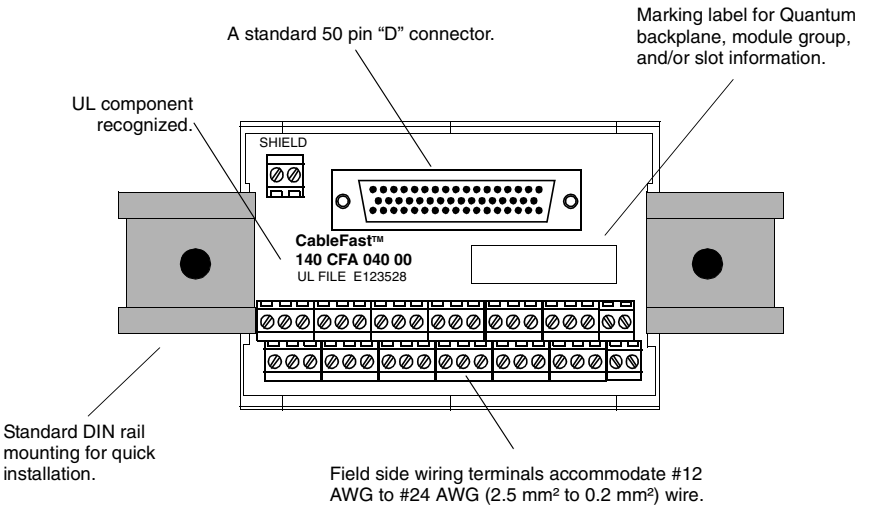
## CableFast Terminal Blocks

This table includes descriptions for the following terminal blocks.

| Block Number | Block Description |
|---|---|
| 140CFA04000 | The A block is a straight through point to point connection on the terminal block. Wiring of this block is identical to wiring the Quantum I/O connector (140XTS00200). |
| 140CFB03200 | The B block is used for individually fused 2-wire digital inputs. This terminal block is designed to prevent a single point failure from affecting the remaining inputs. It is not recommended for sourced 1-wire inputs (powered from the field). |
| 140CFC03200 | The C block provides connection for 32 group fused input or output points. The block may be used for 1- or 2-wire inputs or outputs, and features a fuse per group, four groups total. Users select input or output mode via four switches located on the module. (The default is input mode.) |
| 140CFD03200 | The D block is used for sensors requiring either 2- or 3-wire electrical interface. A fuse per group is supplied to accommodate the I/O module (4) groups. |
| 140CFE03200 | The E block provides connection for 32 individually fused 24 Vdc outputs. 1- and 2-wire interfacing may be selected. Field power must be supplied to the four groups. |
| 140CFG01600 | The G block is a high power output block used on both AC and DC circuits requiring up to 2 A. Individual fusing is provided and may be used in both 1- and 2-wire installations. It is also used for isolated AC modules. |
| 140CFH00800 | The H block is used for analog inputs, with individual fusing provided per channel. This interface provides plus, minus, shield, and power supply interface for both field and loop power configurations. |
| 140CFI00800 | The I block is used for analog inputs. This interface provides plus, minus, shield, and power supply interface for both field and loop power configurations. |
| 140CFJ00400 | The J block is used for analog outputs, with individual fusing provided per channel. This interface provides plus, minus, shield, and power supply interface for both field and loop power configurations. |
| 140CFK00400 | The K block is used for analog outputs. This interface provides plus, minus, shield, and power supply interface for both field and loop power configurations. |

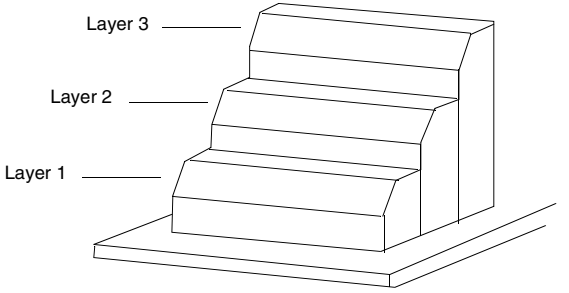
## CableFast Terminal Block Features

All CableFast terminal blocks have the following features.


A standard 50 pin “D” connector.
Marking label for Quantum backplane, module group, and/or slot information.
UL component recognized.
SHIELD
CableFast™
140 CFA 040 00
UL FILE E123528
Standard DIN rail mounting for quick installation.
Field side wiring terminals accommodate #12 AWG to #24 AWG (2.5 mm² to 0.2 mm²) wire.

## CableFast Terminal Block Stacking Convention

The following figure and table show the stacking convention used by CableFast terminal blocks.




| | | | |
|---|---|---|---|
| Signal | | | Layer 3 |
| Positive | Signal | Signal | Layer 2 |
| Negative | Positive | Negative | Layer 1 |

## 140CFA04000 CableFast Cabling Block

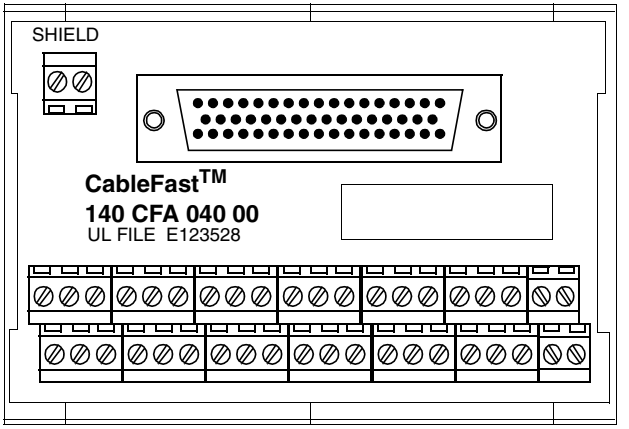
**Overview**

The A block is a straight through point-to-point connection on the terminal block. Wiring of this block is identical to wiring the Quantum I/O connector (140XTS00200).

See *Features of the CableFast Cabling System, p. 858* for a description of the common features and specifications of CableFast Cabling blocks.

**CFA04000 Terminal Block**

The following terminal block is unique to the CFA04000 module.




**Application Notes**

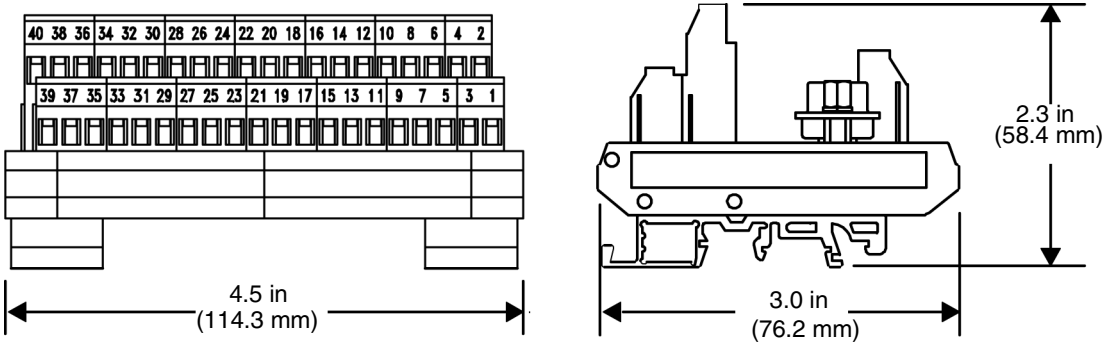
The following are the application notes for the 140CFA04000 terminal block.

1. **Configuration** – Two columns
2. **Compatibility** – This terminal block provides straight through (point-to-point) connection.

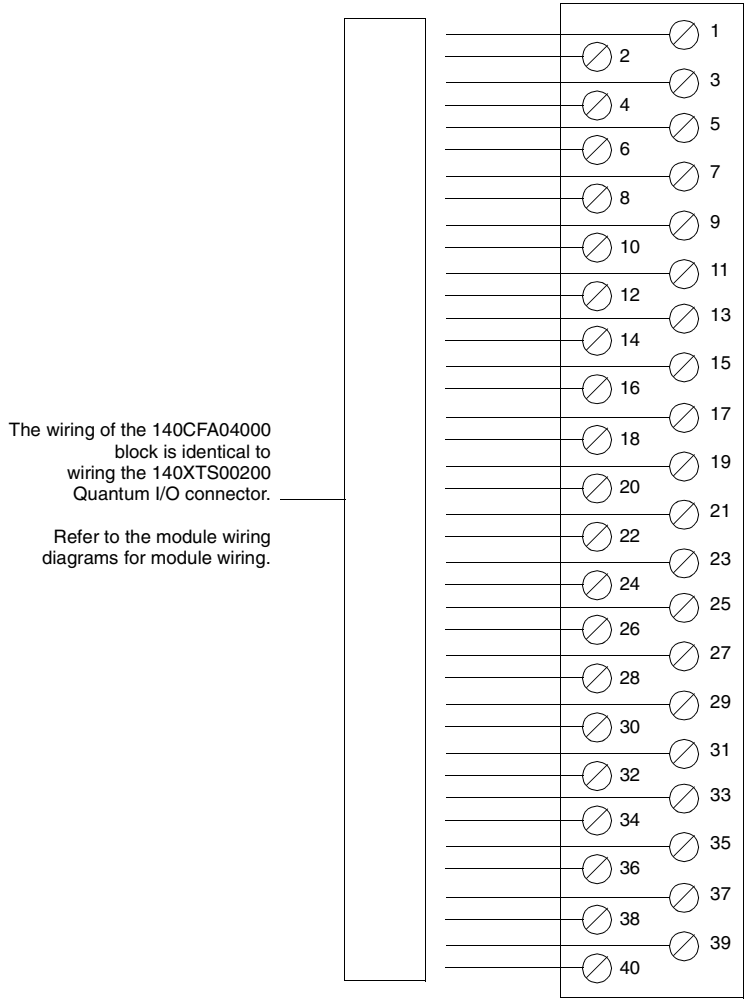
**Note:** This terminal block can be used with all Quantum I/O modules with the exception of the 140ATI03000 Thermocouple Module.

**Dimensions of the Terminal Block**

The following figures show the dimensions of the 140CFA04000 terminal block.



**Wiring Figure** The following figure shows the wiring for the CFA04000 module.



## 140CFB03200 Quantum CableFast Cabling Block

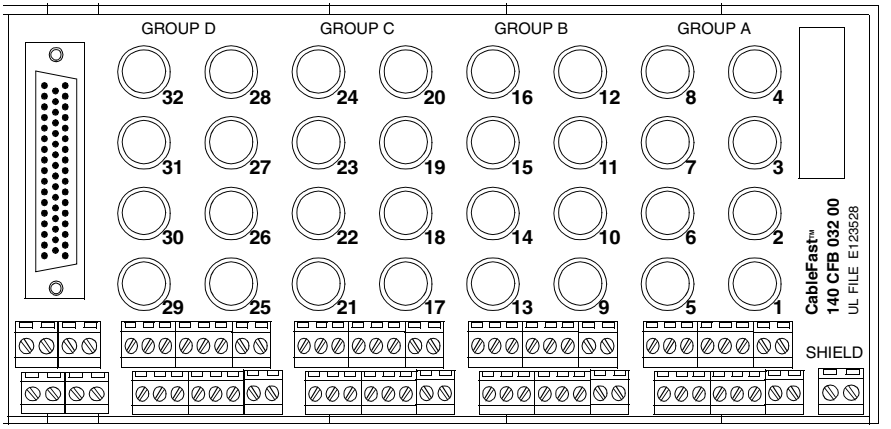
**Overview**

The B block is used for individually fused 2-wire digital inputs. This terminal block is designed to prevent a single point failure from affecting the remaining inputs. It is not recommended for sourced 1-wire inputs (powered from the field).

See *Features of the CableFast Cabling System, p. 858* for information on common specifications and features of CableFast cabling blocks.

**Terminal Block**

The following figure shows the terminal block for the 140CFB03200 module.



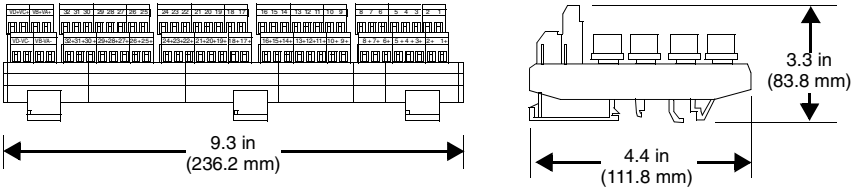

**Application Notes**

The following are the application notes for the 140CFB03200 terminal block.

1. **Configuration** – Arranged in four groups of eight I/O points. Two terminals per point prevent disruption of service due to a single point failure.
2. **Compatibility** – This terminal block provides individual 32 point 0.8 A fusing for the following input modules:140DAI35300, 140DAI45300, 140DAI55300, 140DDO15310, 140DDI35300, and 140DDI85300.

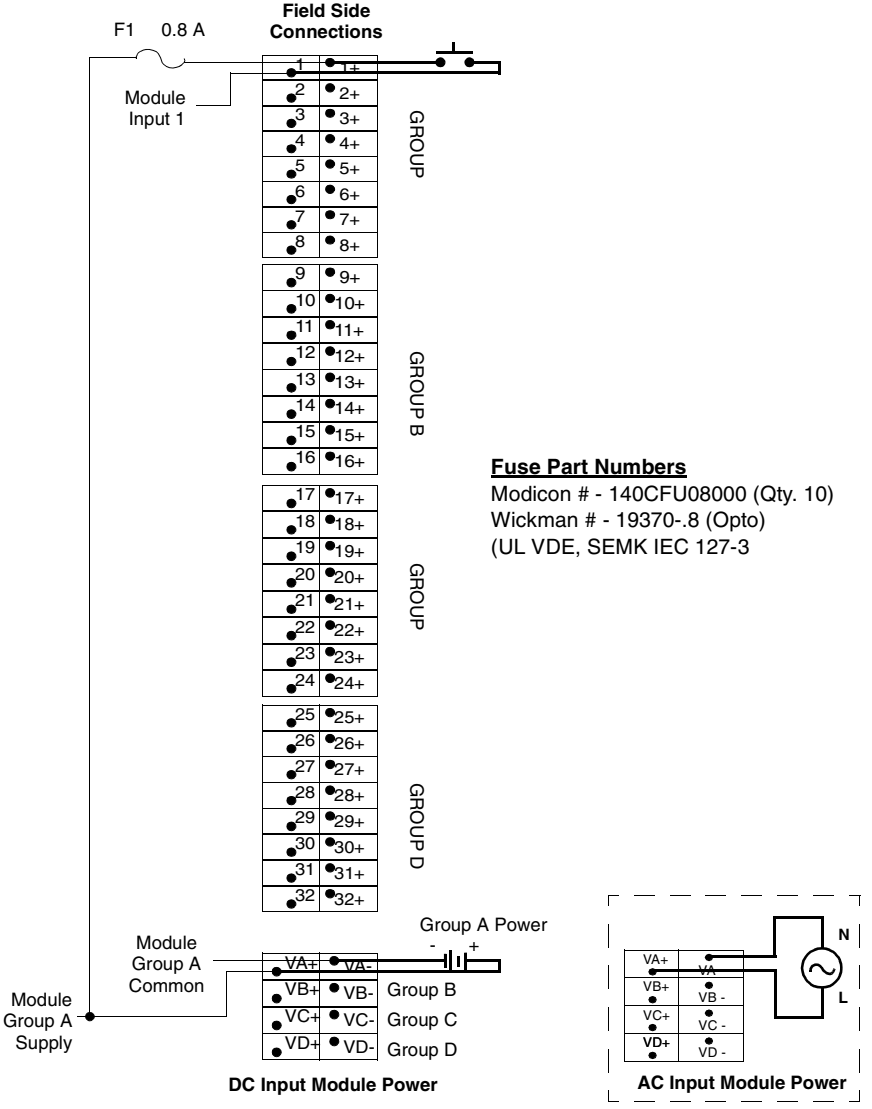
**Dimensions**

The following figures show the dimensions for the 140CFB03200 terminal block.



**Wiring for the Imput Modules**

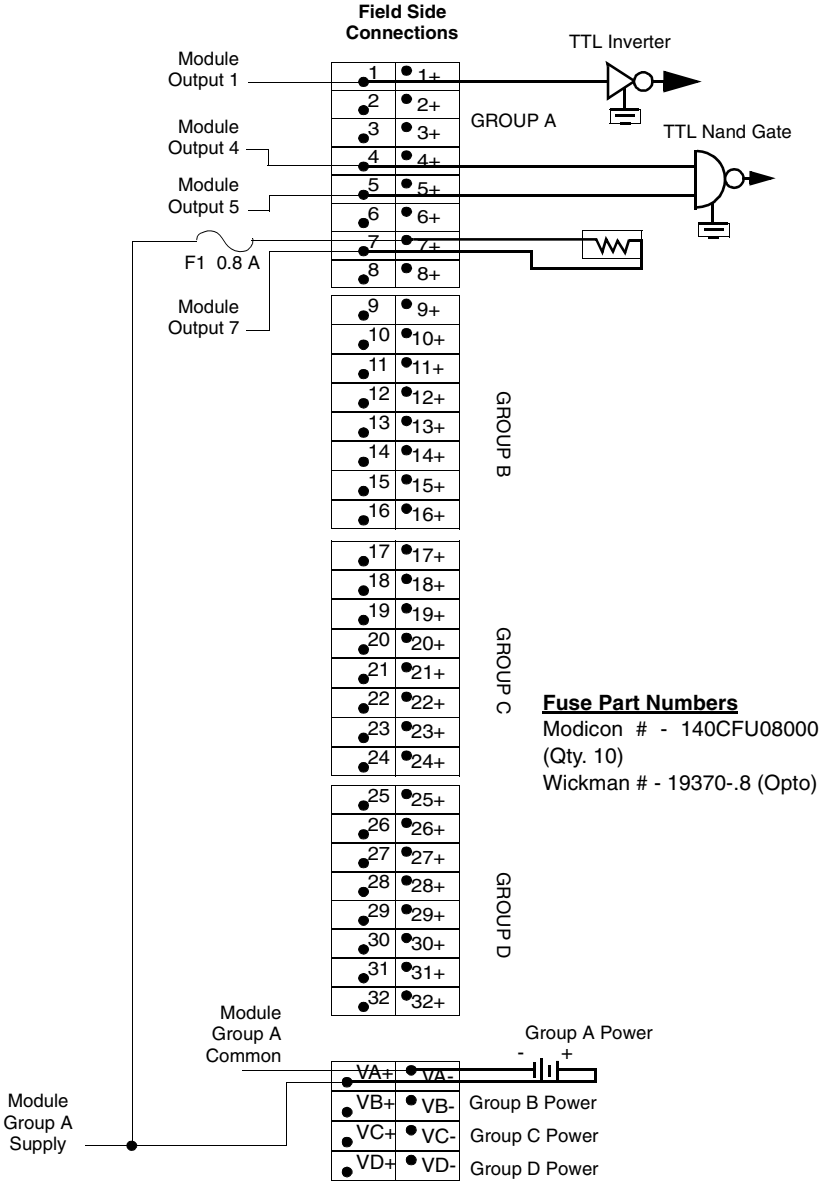
The following figure shows the 140CFB03200 wiring for the following input modules: 140DAI35300, 140DAI45300, 140DAI55300, 140DDI35300, and 140DDI85300.



**Note:** The terminal block commoning strip, Modicon # 140CFX00110 (Qty. 10) can be used to jumper the power between groups.

**Wiring for the Output Module**

The following figure shows the 140CFB03200 wiring for the 140DDO15310 output module.



**Note:** The terminal block commoning strip, Modicon # 140CFX00110 (Qty. 10) can be used to jumper the power between groups.

## 140CFC03200 Quantum CableFast Cabling Block

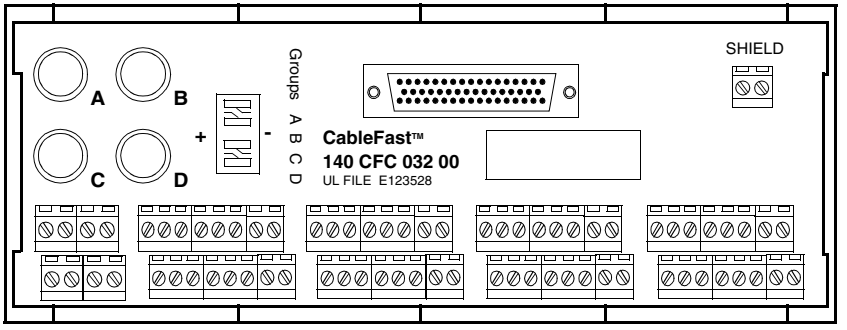
**Overview**

The C block provides connections for 32 group fused input or output points. The block may be used for 1- or 2-wire inputs or outputs, and features a fuse per group – four groups total. Users select input or output mode via four switches located on the module. (The default is input mode.)

See *Features of the CableFast Cabling System, p. 858* for information on common specifications and features of CableFast cabling blocks.

**Terminal Block**

The following figure shows the terminal block for the 140CFC03200 module.



## Application Notes

The following are the application notes for the 140CFC03200 module.

1. **Configuration** – Arranged in four groups of eight I/O points (two terminals per point). This block may be used for one- and two-wire inputs or outputs. The input and output mode is selected via four switches located on the block.
2. **Compatibility** – This terminal block provides 0.8 A group fusing for the following discrete modules:

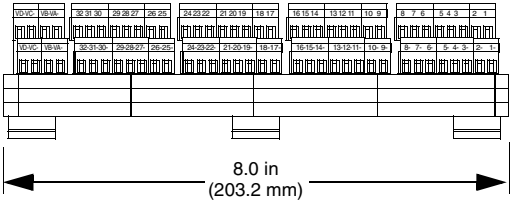
The following table shows the modules provided with 0.8 A group fusing.

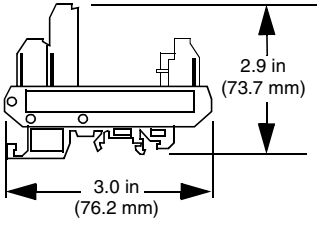
| Module | Mode | Switch Setting | Fuse Rating |
|---|---|---|---|
| 140 DAI 353 00 | Input | + | 0.8 A |
| 140 DAI 453 00 | Input | + | 0.8 A |
| 140 DAI 553 00 | Input | + | 0.8 A |
| 140 DDI 153 10 | Input | - | 0.8 A |
| 140 DDI 353 00 | Input | + | 0.8 A |
| 140 DDI 853 00 | Input | + | 0.8 A |
| 140 DDO 153 10 | Output | + | 4 A |
| 140 DDO 353 00 | Output | - | 4 A |

**Note:** Select input or output mode with the four switches located on the terminal.

## Dimensions

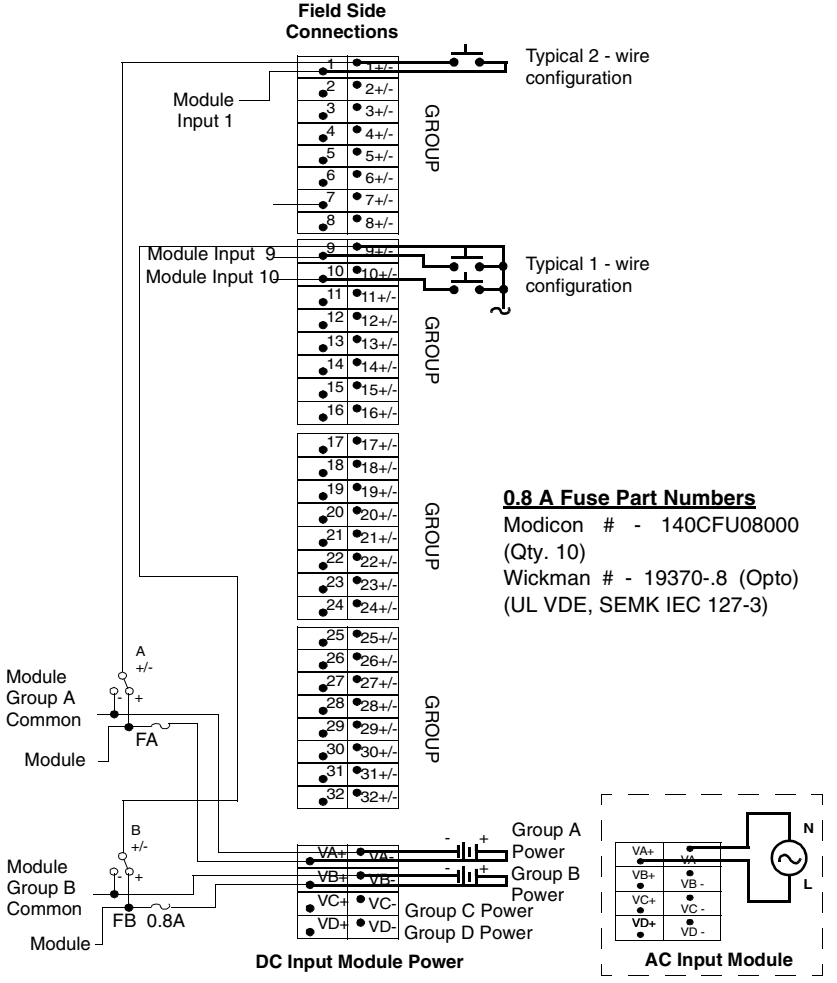
The following figures show the dimensions for the 140CFC03200 terminal block block. All four switches must be set to the same position.



**Wiring Diagram for Input Modules**

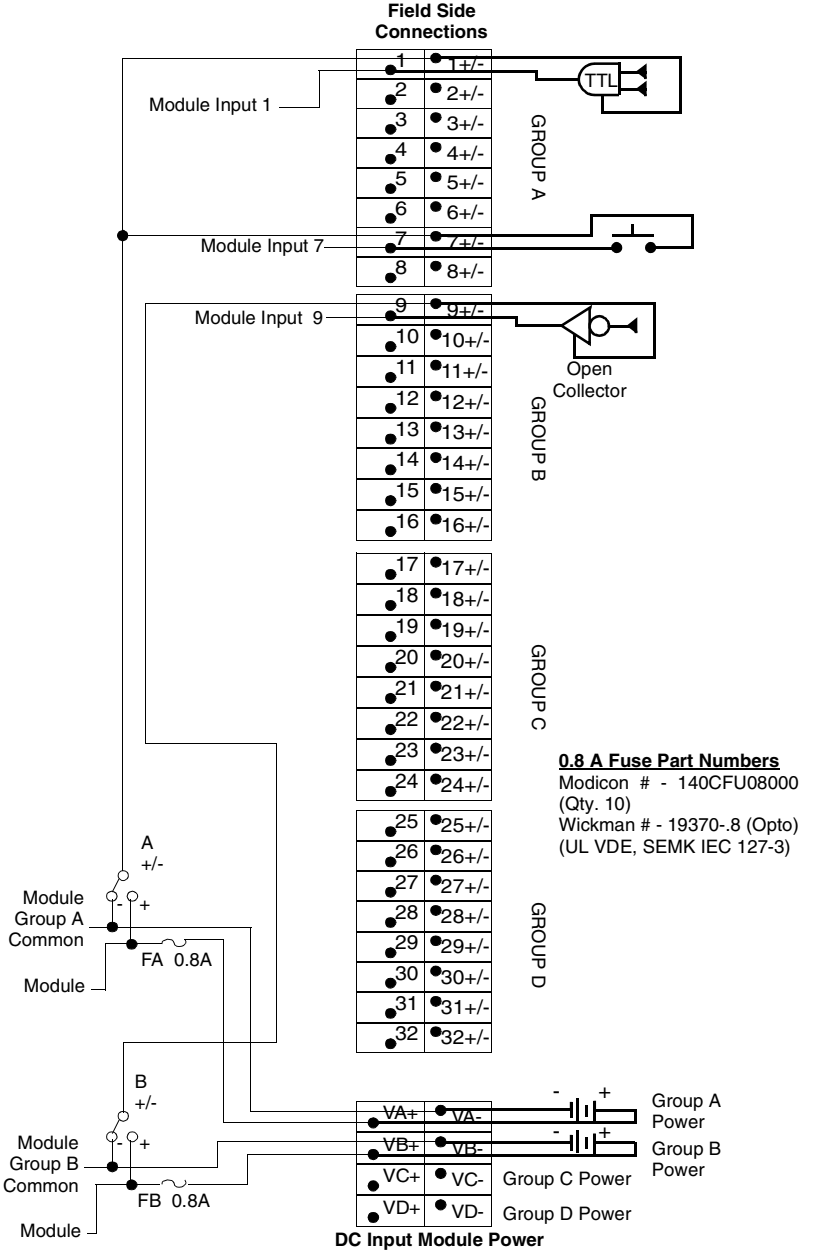
The following shows the 140CFC03200 wiring for the following input modules: 140DAI35300, 140DAI45300, 140DAI55300, 140DDI35300, and 140DDI85300.




**Note:** The terminal block commoning strip, Modicon # 140CFX00110 (Qty. 10), can be used to jumper the power between groups.

**Wiring Diagram for DDI15310 Input Module**

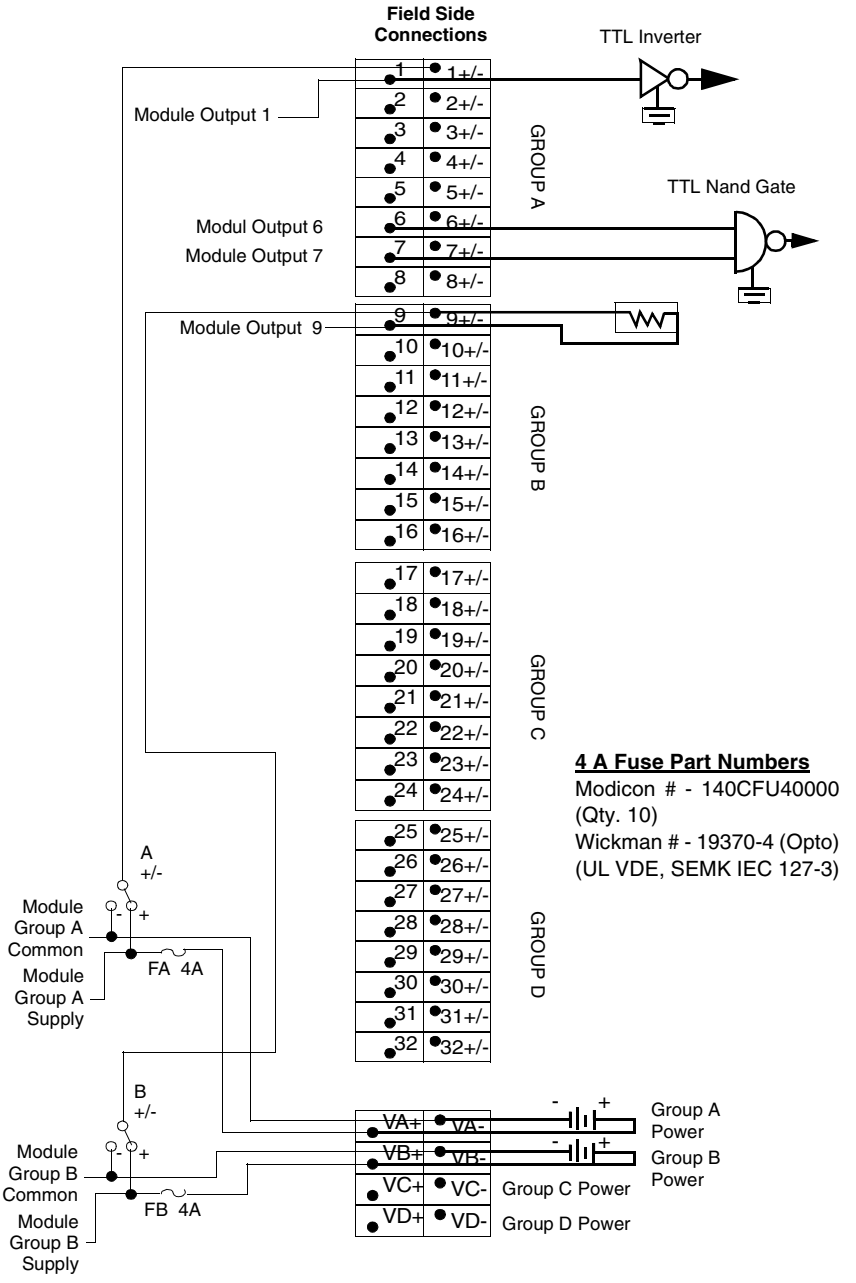
The following figure shows the 140CFC03200 wiring for the 140DDI15310 input module.



**Note:** The terminal block commoning strip, Modicon # 140CFX00110 (Qty. 10), can be used to jumper the power between groups.

**Wiring Diagram for DDO15310 Output Module**

The following figure shows the 140CFC03200 wiring for the 140DDO15310 output module.

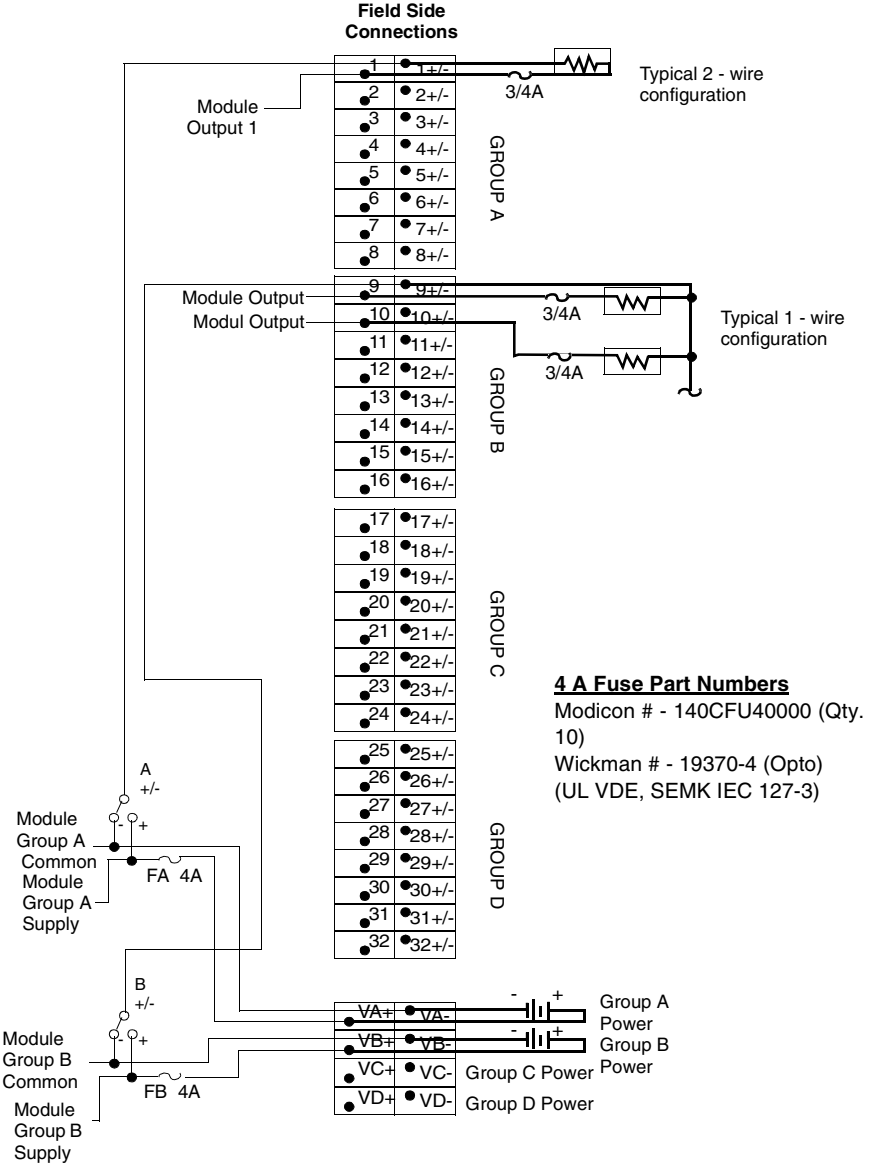


**Note:**

1. The 140CFC03200 is shipped with Modicon 140CFU08000 (0.8 A fuse) installed. Ensure that the Modicon 140CFU40000 (4 A fuse) is installed when the 140CFC03200 and the 140DDO15300 are wired together.
2. The terminal block commoning strip, Modicon 140CFX00110 (Qty. 10), can be used to jumper the power between groups.

**Wiring Diagram for DDO3530X Output Module**

The following figure shows the 140CFC03200 wiring for the 140DDO35300 and 140DDO35301 output modules.



**Note:**

1. The 140CFC03200 is shipped with Modicon 140CFU08000 (0.8 A fuse) installed. Ensure that the Modicon 140CFU40000 (4 A fuse) is installed when the 140CFC03200 and the 140DDO35300 are wired together.
2. The terminal block commoning strip, Modicon 140CFX00110 (Qty. 10), can be used to jumper the power between groups.

## 140CFD03200 Quantum CableFast Cabling Block

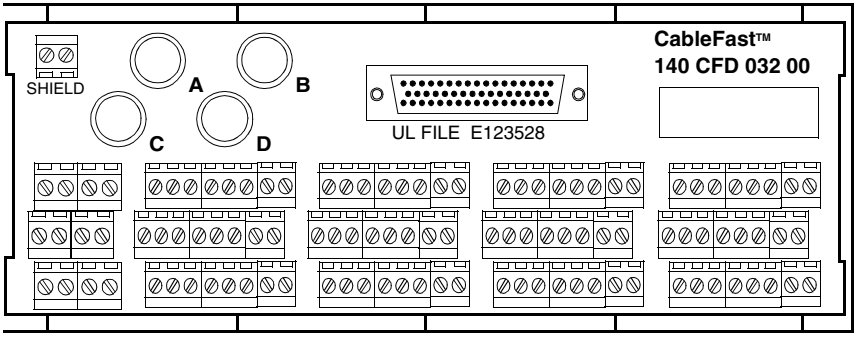
**Overview**

The D block is used for sensors requiring either 2- or 3-wire electrical interfaces. A fuse per group is supplied to accommodate the I/O module (4) groups.

See *Features of the CableFast Cabling System, p. 858* for information on common specifications and features of CableFast cabling blocks.

**Terminal Block**

The following figure shows the 140CFD03200 terminal block.



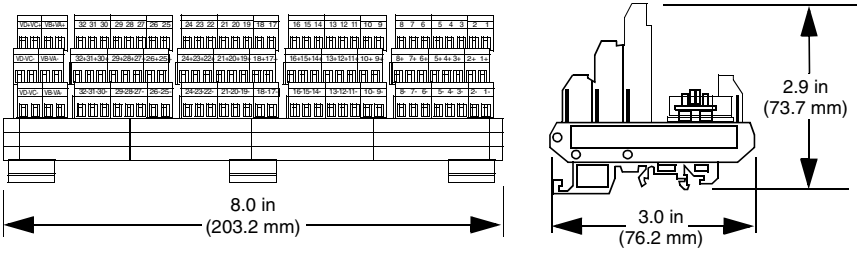

**Application Notes**

The following are the application notes for the 140CFD03200 module.

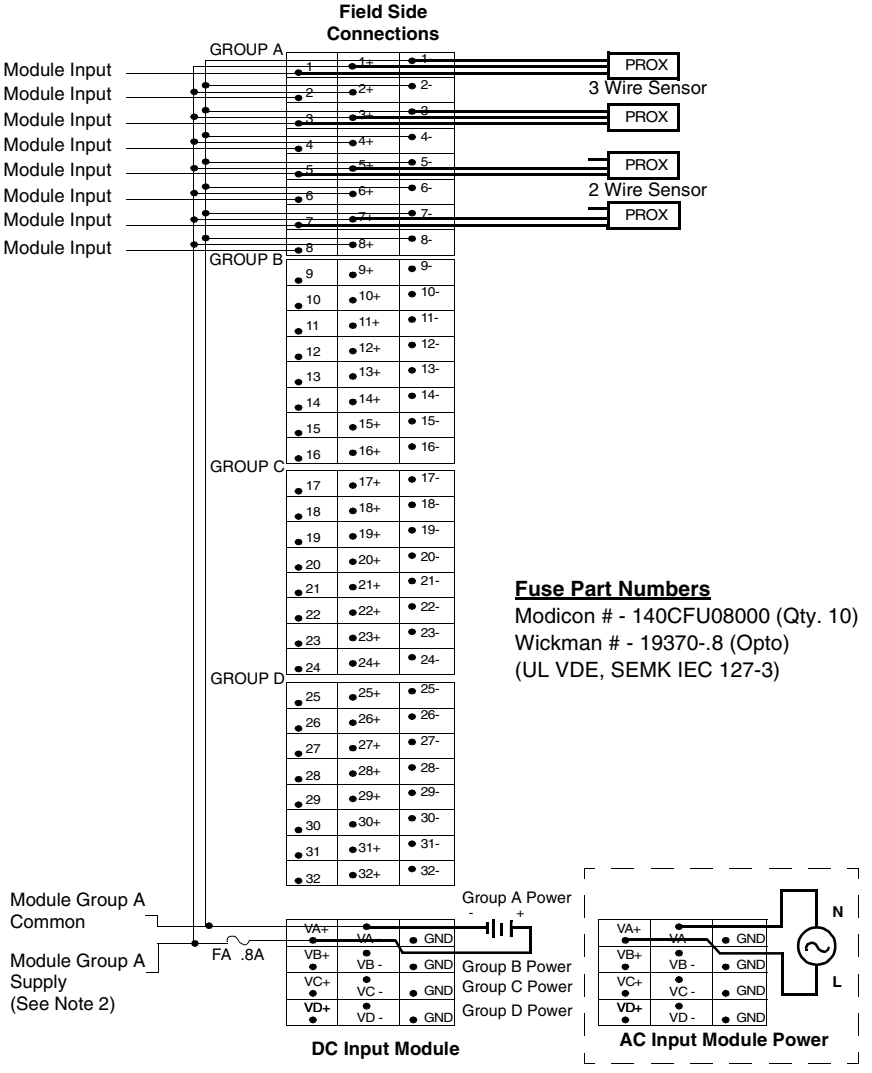
1. **Configuration** – Arranged in four groups of eight I/O points. Each input is allocated three terminals.
2. **Compatibility** – This terminal block provides 0.8 A group fusing connection points for 3-wire and 2-wire proximity switches and is used with the following modules: 140DAI35300, 140DAI45300, 140DAI55300, 140DDI35300, and 140DDI85300.

**Dimensions**

The following shows the dimensions for the 140CFD03200 module.



**Wiring Diagram** The following figure shows the wiring for the 140CFD03200 module.



**Note:**
1. The GND (ground) terminal points are not connected.
2. The terminal block commoning strip, Modicon # 140CFX00110 (Qty. 10), can be used to jumper the power between groups.

## 140CFE03200 Quantum CableFast Cabling Block

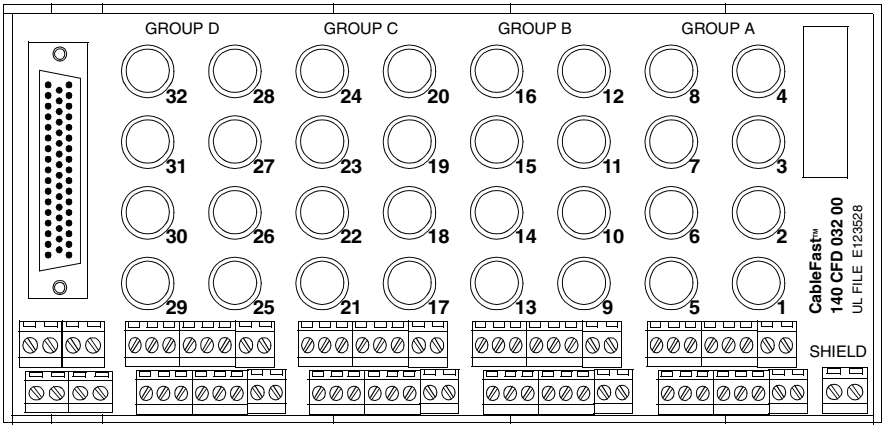
**Overview**

The E block provides connections for 32 individually fused 24 Vdc outputs. 1- and 2-wire interfacing may be selected. Field power must be supplied to the four groups.

See *Features of the CableFast Cabling System, p. 858* for information on common specifications and features of CableFast cabling blocks.

**Terminal Block**

The following figure shows the 140CFE03200 terminal block.



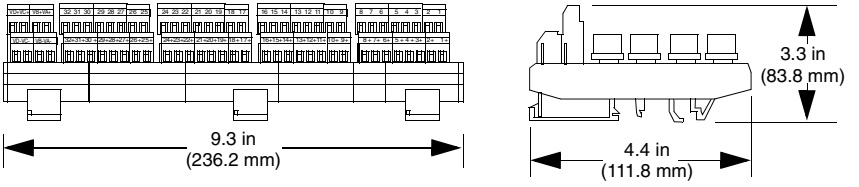

**Application Notes**

The following are the application notes for the 140CFE03200 module.

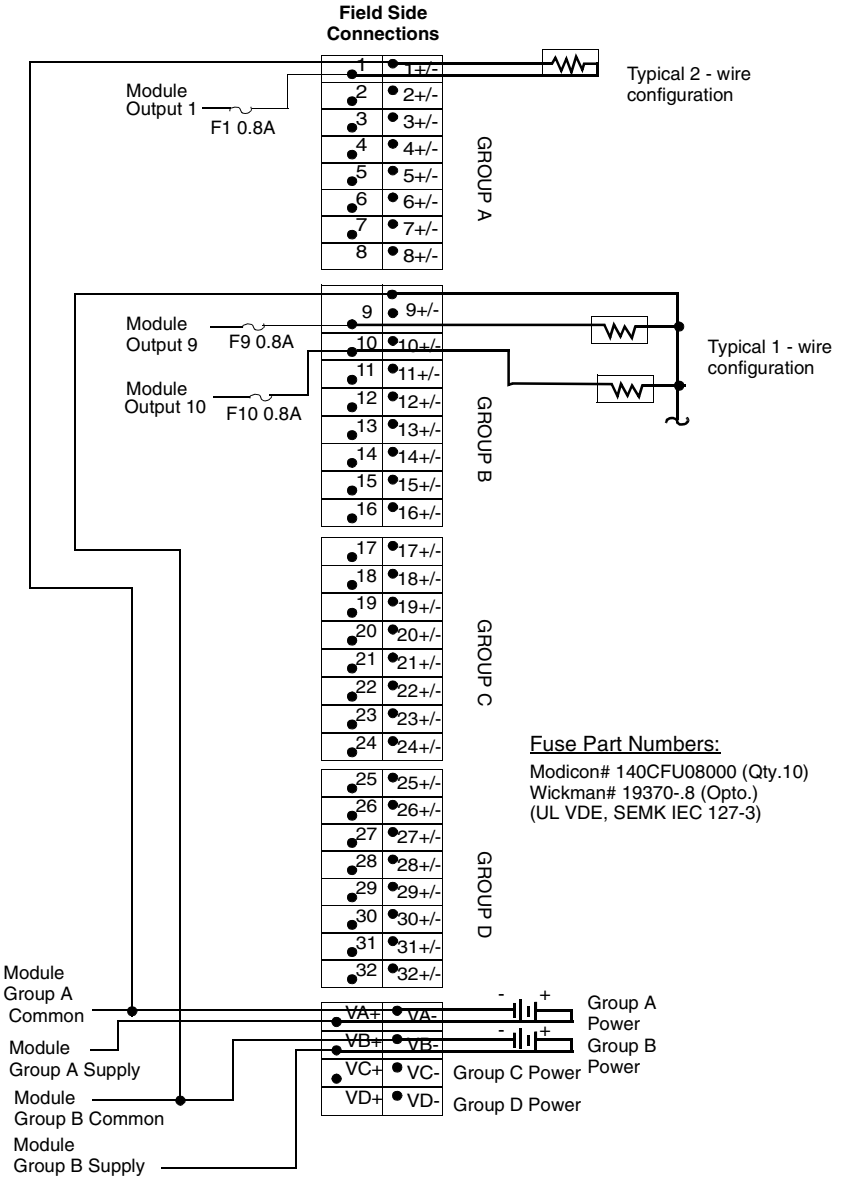
1. **Configuration** – Arranged in four groups of eight I/O points. Two terminals per point prevent disruption of service due to a single point failure.
2. **Compatibility** – This terminal block provides individual 32 point 0.8 A fusing for the 140DDO35300 and the 140DDO35301 modules.

**Dimensions**

The following shows the dimensions for the 140CFE03200 module.



**Wiring Diagram** The following figure shows the wiring for the 140CFE03200 module.



**Note:** The terminal block commoning strip, Modicon #140CFX00110 (QTY. 10), can be used to jumper the power between groups.

## 140CFG01600 Quantum CableFast Cabling Block

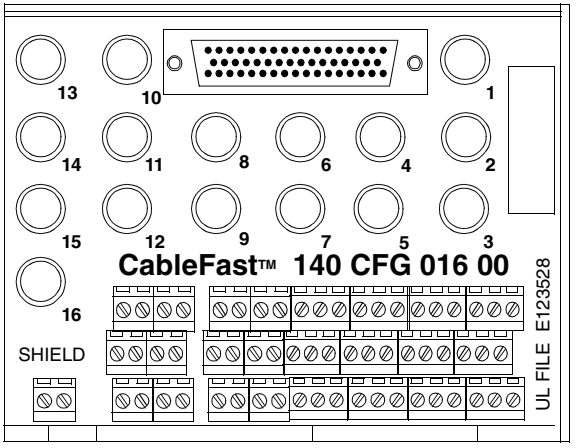
**Overview**

The G block is a high-power output block used on both AC and DC circuits requiring up to 2 A. Individual fusing is provided and may be used in both 1- and 2-wire installations. It is also used for isolated AC modules.

See *Features of the CableFast Cabling System, p. 858* for information on common specifications and features of CableFast cabling blocks.

**Terminal Block**

The following figure shows the 140CFG01600 terminal block.



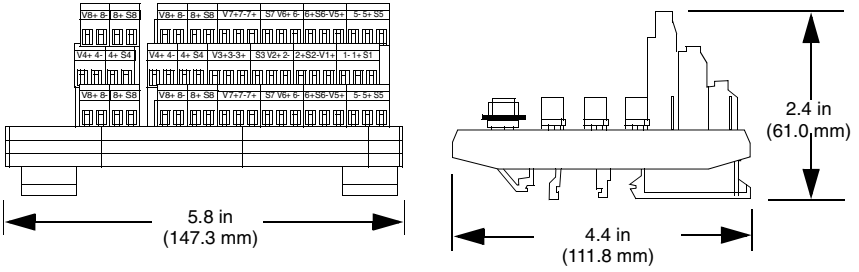

**Application Notes**

The following are the application notes for the 140CFG01600 module.

1. **Configuration** – Arranged in 16 isolated I/O points.
2. **Compatibility** – This terminal block provides individual 16 point 4 A fused connection points for the following modules: 140DAI34000, 140DAI44000, 140DAI54000, 140DAO84000, 140DAO84010, 140DAO84210, 140DAO84220, and 140DDO84300.

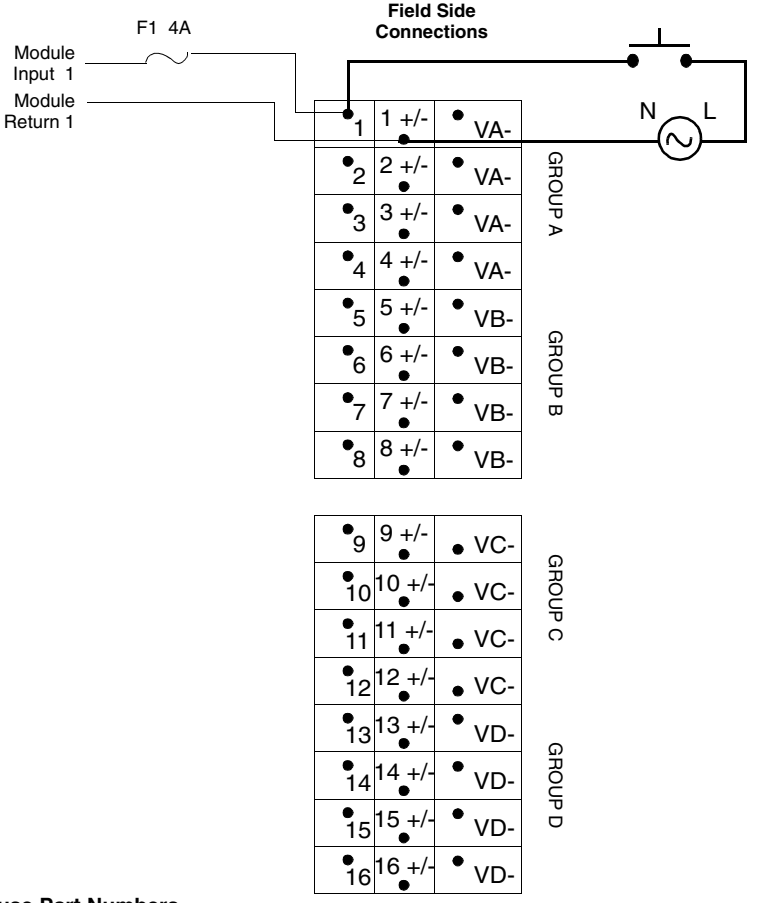
**Dimensions**

The following figures show the dimensions for the 140CFG01600 module.



**Wiring Diagram for Isolated AC Input Mode**

The following figure shows the 140CFG01600 wiring for the input (isolated AC input mode) modules: 140DAI34000, 140DAI44000, and 140DAI54000.




**Fuse Part Numbers**

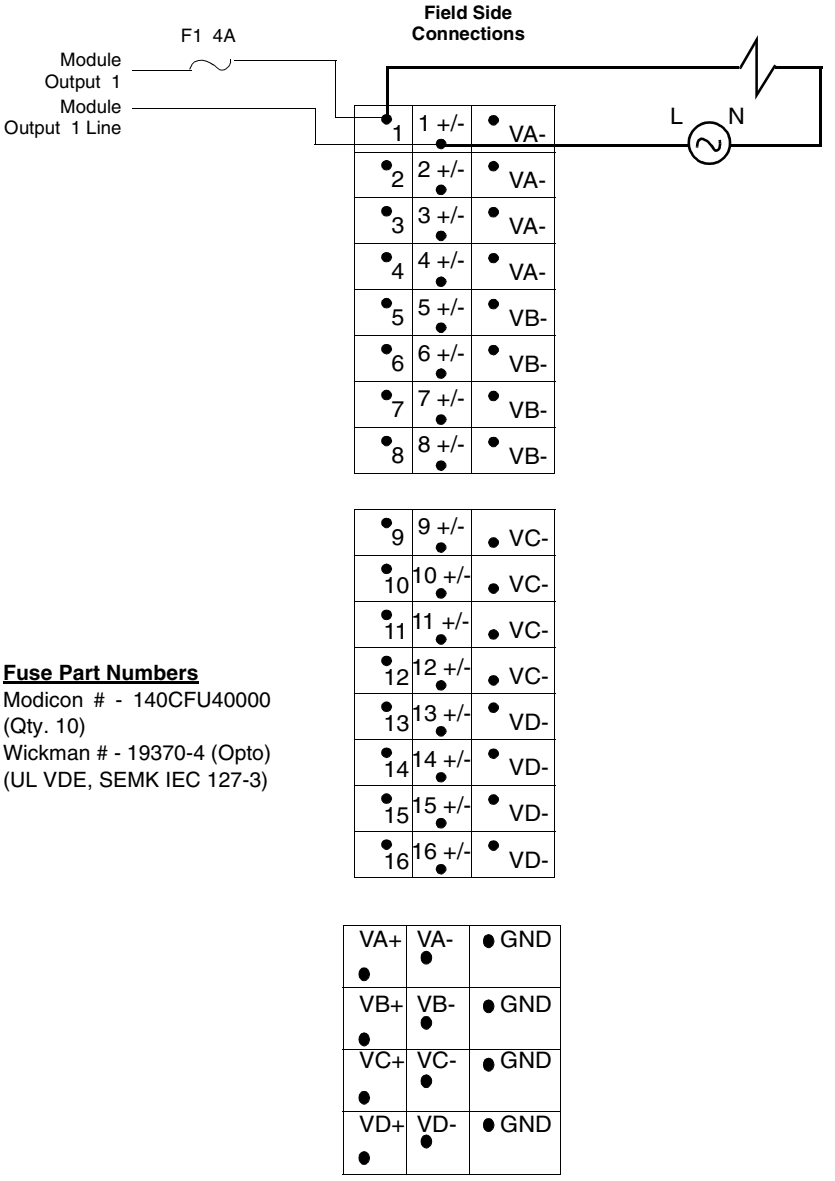
Modicon # - 140CFU40000 (Qty. 10)
Wickman # - 19370-4 (Opto) (UL VDE, SEMK IEC 127-3)

| | | |
|---|---|---|
| VA+ | VA- | GND |
| VB+ | VB- | GND |
| VC+ | VC- | GND |
| VD+ | VD- | GND |

**Note:**
1. The terminal block commoning strip, Modicon # 140CFX00110 (Qty. 10), can be used to jumper the power between groups.
2. The GND (ground) terminal points are not connected.

**Wiring Diagram for Isolated Output Mode**

The following shows the 140CFG01600 wiring for the 140DAO84000 and 140DAO84010 output modules (isolated output mode).



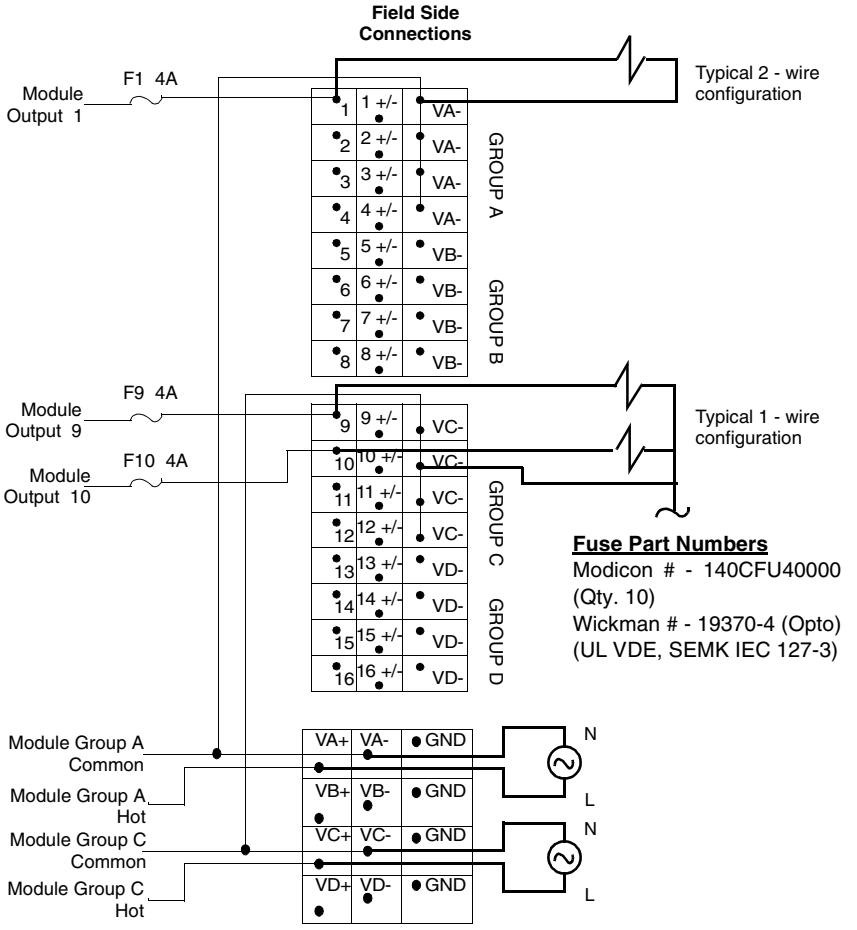

**Fuse Part Numbers**

Modicon # - 140CFU40000 (Qty. 10)
Wickman # - 19370-4 (Opto) (UL VDE, SEMK IEC 127-3)

**Note:**
1. The terminal block commoning strip, Modicon # 140CFX00110 (Qty. 10), can be used to jumper the power between groups.
2. The GND (ground) terminal points are not connected

**Wiring Diagram for Grouped AC Output Mode**

The following figure shows the 140CFG01600 wiring for the 140DA084210 and 140DAO84220 output modules (grouped AC output mode).

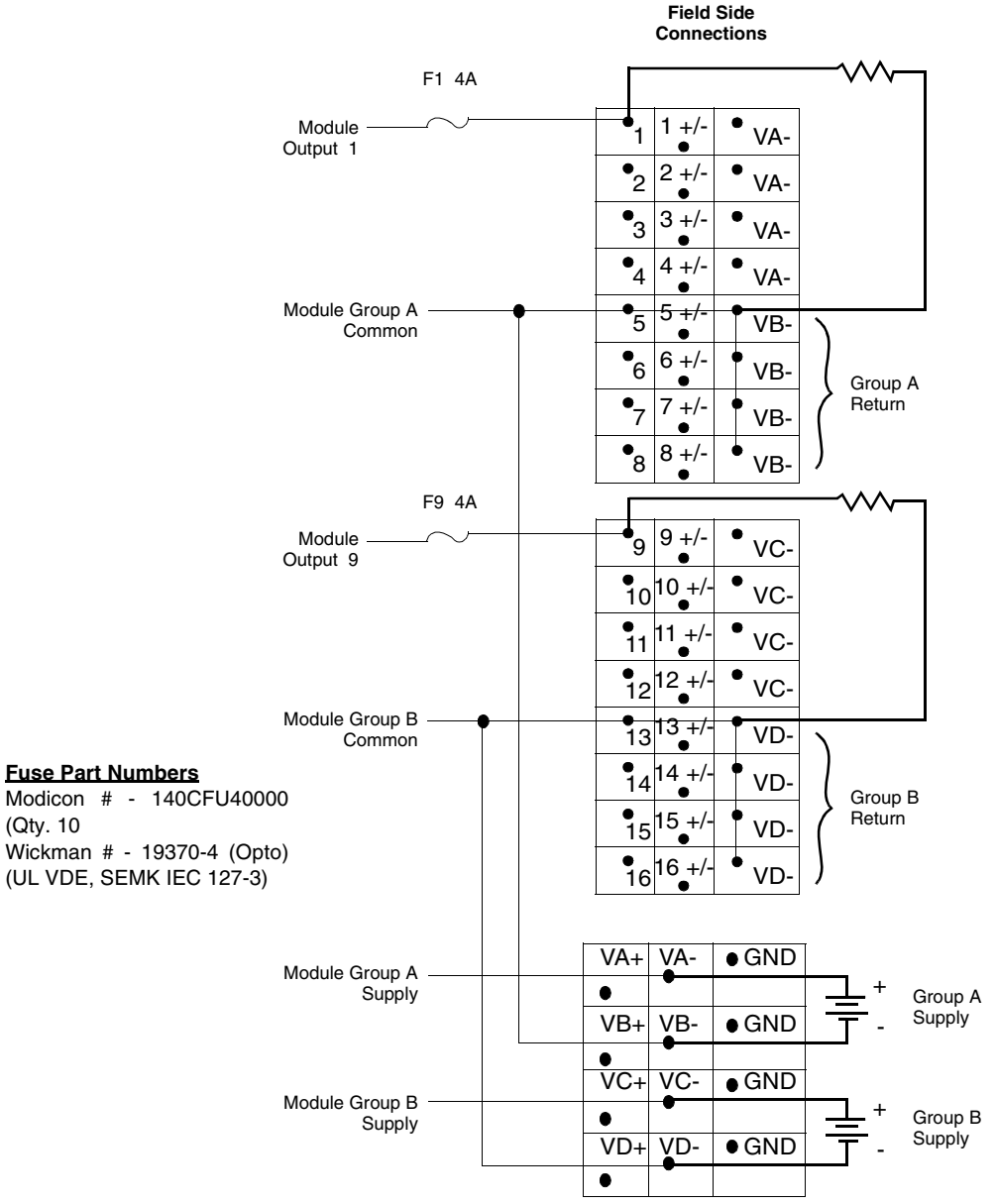



**Note:**

1. The terminal block commoning strip, Modicon # 140CFX00110 (Qty. 10), can be used to jumper the power between groups.
2. The GND (ground) terminal points are not connected.

**Wiring Diagram for Grouped DC Output Mode**

The following figure shows the 140CFG01600 wiring for the 140DDO84300 (grouped DC output mode) module.



**Note:**
1. The terminal block commoning strip, Modicon # 140CFX00110 (Qty. 10), can be used to jumper the power between groups.
2. The GND (ground) terminal points are not connected.

## 140CFH00800 Quantum CableFast Cabling Block

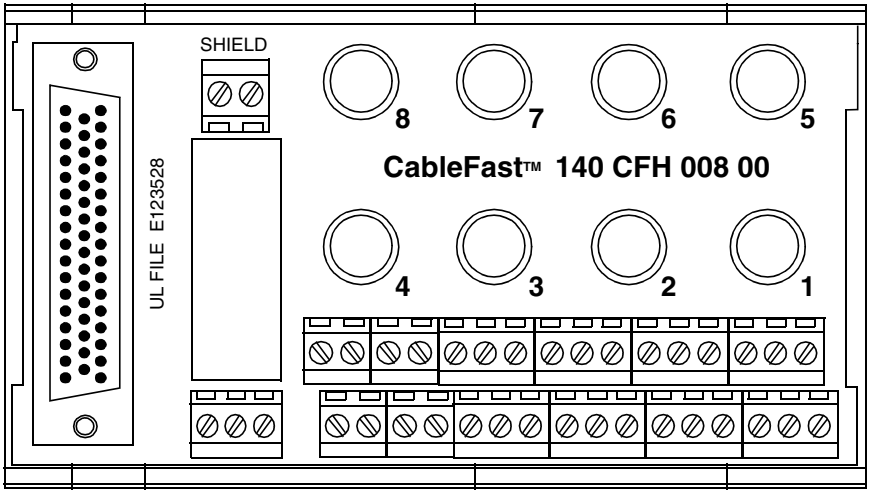
**Overview**

The H block is used for analog inputs, with individual fusing provided per channel. This interface provides plus, minus, shield, and power supply interface for both field and loop power configurations.

See *Features of the CableFast Cabling System, p. 858* for information on common specifications and features of CableFast cabling blocks.

**Terminal Block**

The following figure shows the 140CFH00800 terminal block.



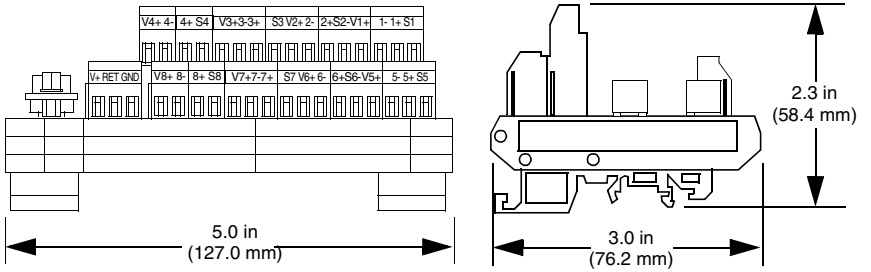

**Application Notes**

The following are the application notes for the 140CFH00800 module.

1. **Configuration** – Eight analog inputs with a common loop supply. Each point is allocated four terminals.
2. **Compatibility** – This terminal block provides individually 0.063 A fused connection point sets for the 140ACI03000 and 140AVI03000 analog input modules.

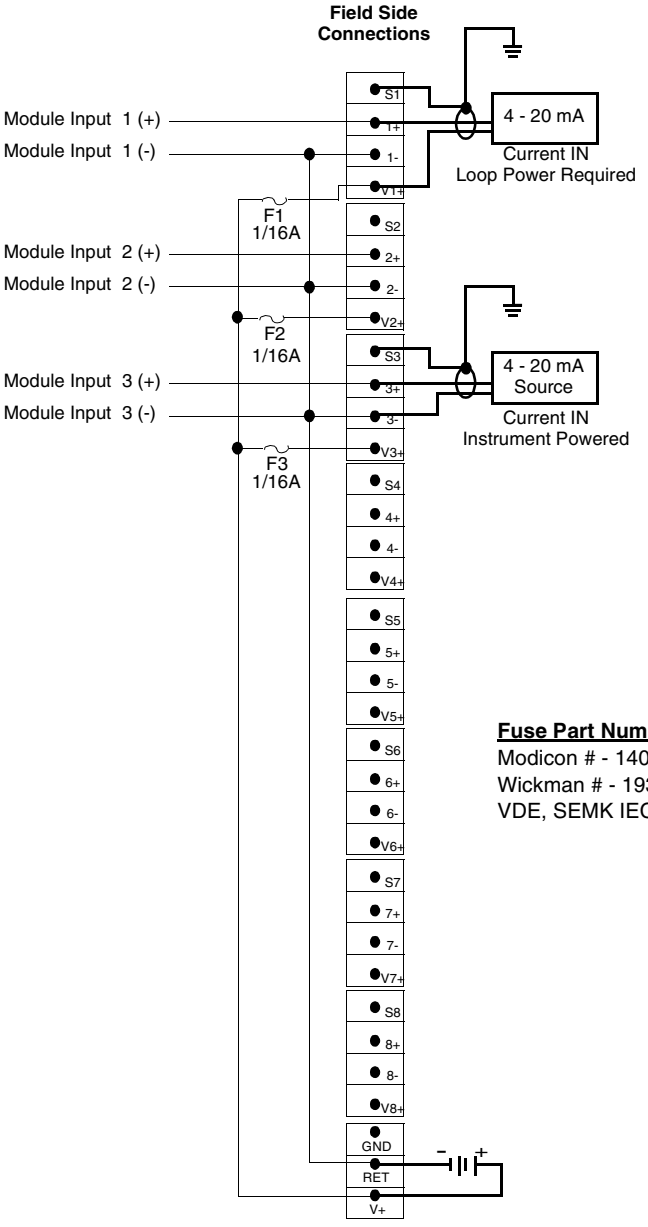
**Dimensions**

The following figures show the dimensions for the 140CFH00800 module.



**Wiring Diagram (Source Grounding)**

The following figure shows the wiring for the 140CFH00800 (source grounding) module.




**Fuse Part Numbers**

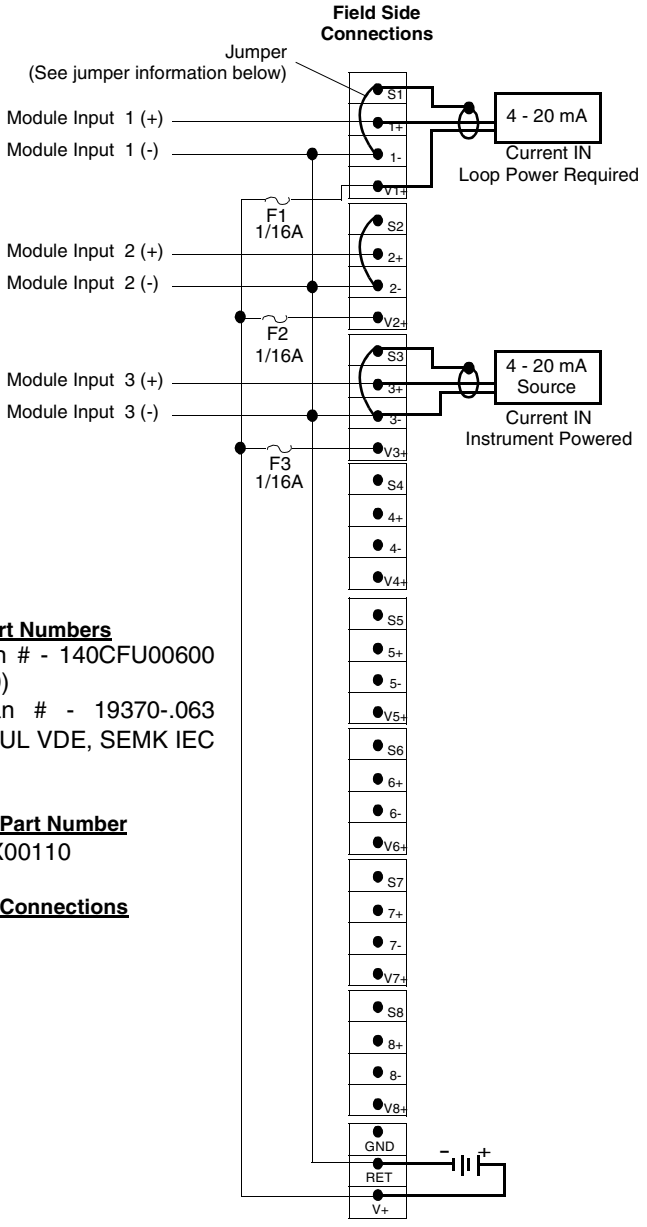
Modicon # - 140CFU00600 (Qty. 10)
Wickman # - 19370-.063 (Opto) (UL VDE, SEMK IEC 127-3)

**Note:**

1. When using a single power supply, there will be no channel-to-channel isolation of input points.
2. For the required jumper options for the 140ACI03000 and the 140AVI03000, see the wiring diagrams in *140ACI03000 I/O Analog In Module, p. 533* and *140AVI03000 I/O Analog IN 8 Channel Bipolar Module, p. 553*.
3. The GND (ground) terminal point is not connected.

**Wiring Diagram (Instrument Grounding)**

The following figure shows the wiring (instrument grounding) for the 140CFH00800 module.




**Fuse Part Numbers**
Modicon # - 140CFU00600 (Qty. 10)
Wickman # - 19370-.063 (Opto) (UL VDE, SEMK IEC 127-3)

**Jumper Part Number**
140CFX00110

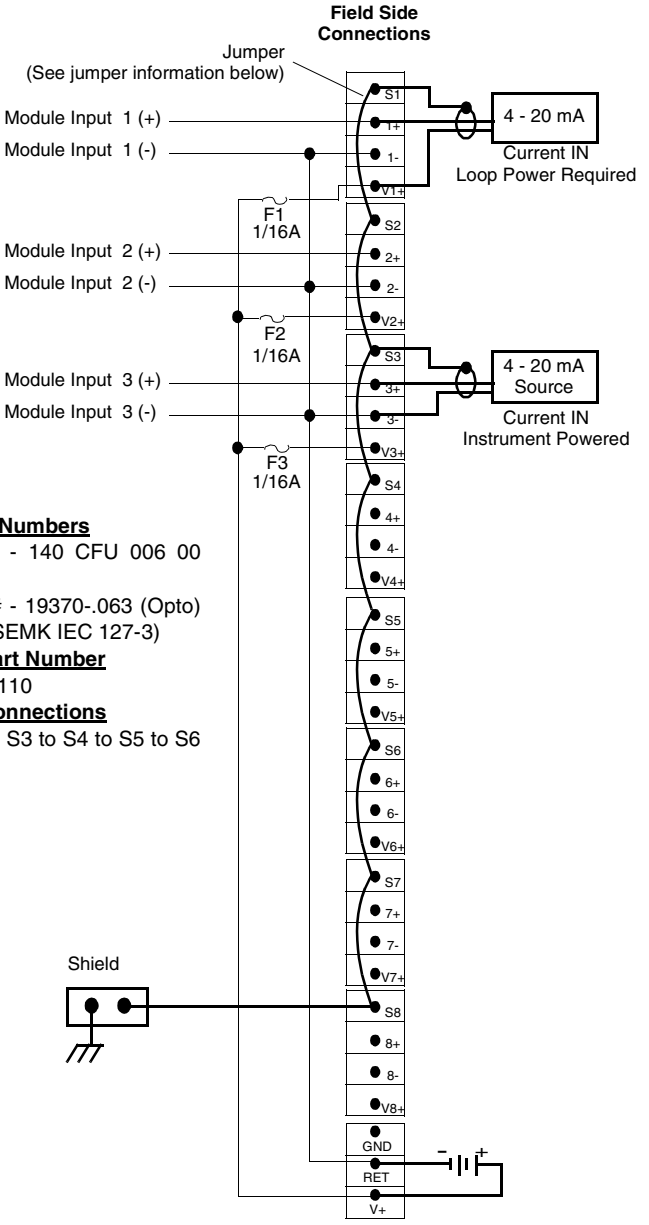
**Jumper Connections**
S1 to 1-
S2 to 2-
S3 to 3-

**Note:**

- When using a single power supply, there will be no channel-to-channel isolation of input points.
- For the required jumper options for the 140ACI03000 and the 140AVI03000, see the wiring diagrams in *140ACI03000 I/O Analog In Module, p. 533*. and *140AVI03000 I/O Analog IN 8 Channel Bipolar Module, p. 553*.
- The GND (ground) terminal point is not connected.

**Wiring Diagram (Chassis Grounding)**

The following figure shows the wiring (chassis grounding) for the 140CFH00800 module.



**Note:**
1. When using a single power supply, there will be no channel-to-channel isolation of input points.
2. For the required jumper options for the 140ACI03000 and the 140AVI03000, see the wiring diagrams in *140ACI03000 I/O Analog In Module, p. 533*. and *140AVI03000 I/O Analog IN 8 Channel Bipolar Module, p. 553*.
3. The GND (ground) terminal point is not connected.

## 140CFI00800 Quantum CableFast Cabling Block

**Overview**

The I block is used for analog inputs. This interface provides plus, minus, shield, and power supply interfaces for both field and loop power configurations.

See *Features of the CableFast Cabling System, p. 858* for information on common specifications and features of CableFast cabling blocks.

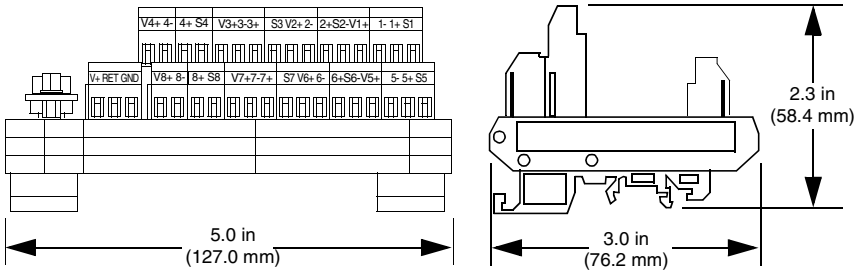
**Application Notes**

The following are the application notes for the 140CFI00800 module.

1. **Configuration** – Eight analog inputs with a common loop supply. Each point is allocated four terminals.
2. **Compatibility** – This terminal block provides eight connection point sets for the 140ACI03000 and 140AVI03000 analog input modules.

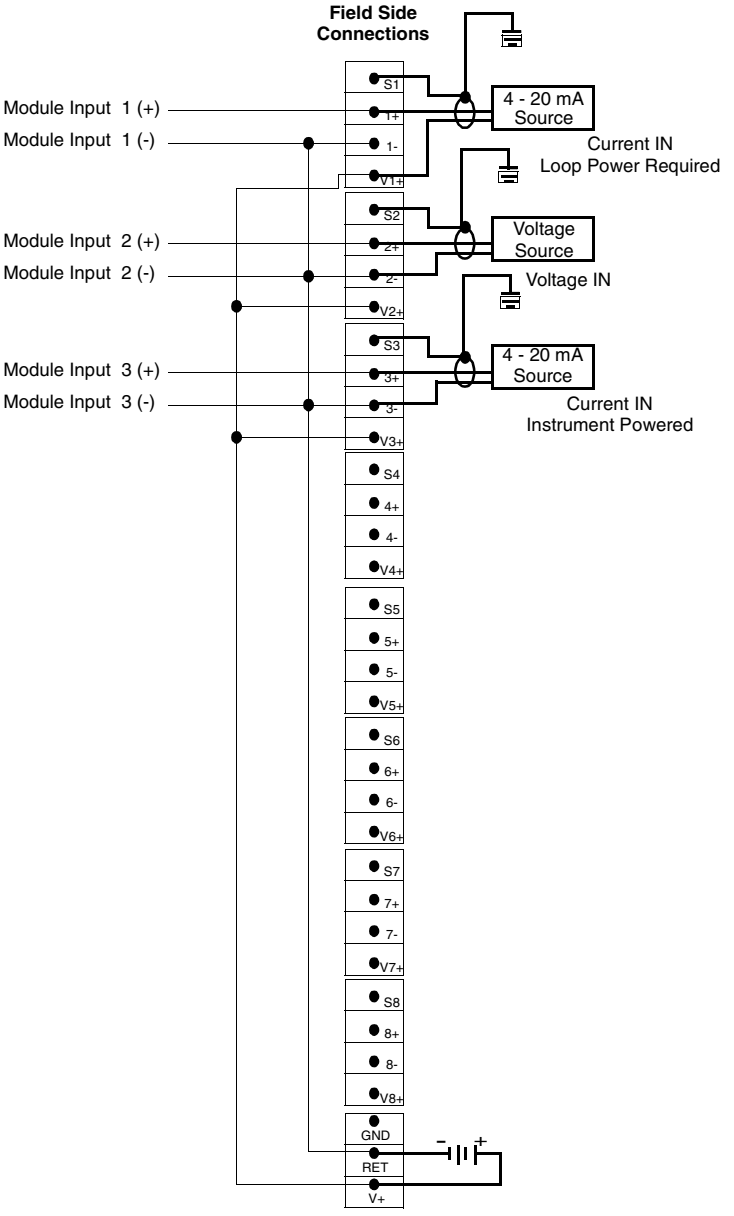
**Dimensions**

The following figures show the dimensions for the 140CFI00800 module.



**Wiring Diagram (Source Grounding)**

The following figure shows the wiring for the140CFI00800 (source grounding) module.

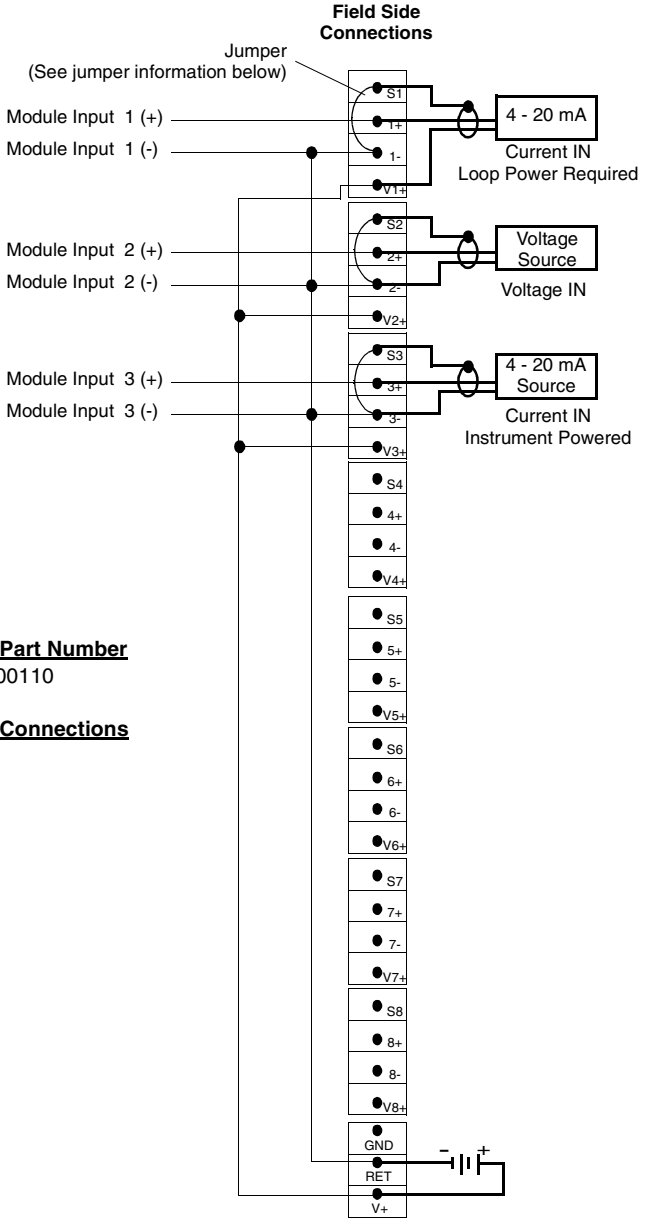


**Note:**

1. When using a single power supply, there will be no channel-to-channel isolation of input points.
2. For the required jumper options for the 140ACI03000 and the 140AVI03000, see the wiring diagrams in *140ACI03000 I/O Analog In Module, p. 533* and *140AVI03000 I/O Analog IN 8 Channel Bipolar Module, p. 553*.
3. The GND (ground) terminal point is not connected.

**Wiring Diagram (Instrument Grounding)**

The following figure shows the wiring for the140CFI00800 (instrument grounding) module.




**Jumper Part Number**
140CFX00110

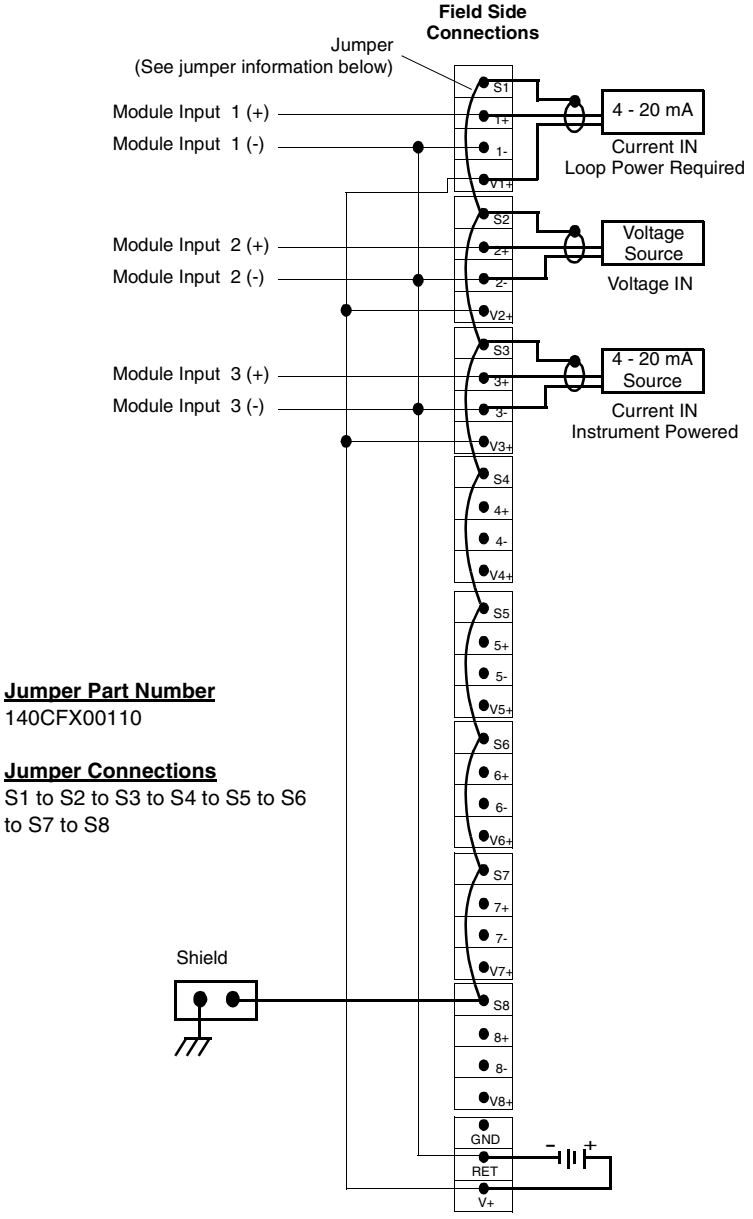
**Jumper Connections**
S1 to 1-
S2 to 2-
S3 to 3-

**Note:**

1. When using a single power supply, there will be no channel-to-channel isolation of input points.
2. For the required jumper options for the 140ACI03000 and the 140AVI03000, see the wiring diagrams in *140ACI03000 I/O Analog In Module, p. 533* and *140AVI03000 I/O Analog IN 8 Channel Bipolar Module, p. 553*..
3. The GND (ground) terminal point is not connected.

**Wiring Diagram (Chassis Grounding)**

The following figure shows the wiring for the 140CFI00800 (chassis grounding) module.



**Note:**

1. When using a single power supply, there will be no channel-to-channel isolation of input points.
2. For the required jumper options for the 140ACI03000 and the 140AVI03000, see the wiring diagrams in *140ACI03000 I/O Analog In Module, p. 533* and *140AVI03000 I/O Analog IN 8 Channel Bipolar Module, p. 553* .
3. The GND (ground) terminal point is not connected.

## 140CFJ00400 Quantum CableFast Cabling Block

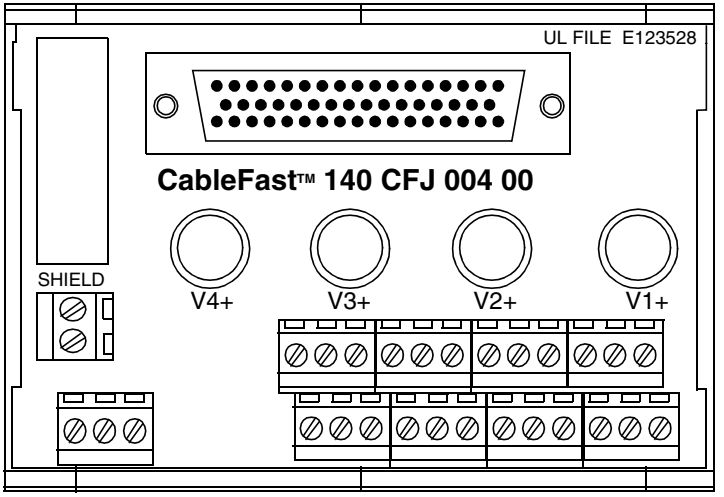
**Overview**

The J block is used for analog outputs, with individual fusing provided per channel. This interface provides plus, minus, shield, and power supply interfaces for both field and loop power configurations.

See *Features of the CableFast Cabling System, p. 858* for information on common specifications and features of CableFast cabling blocks.

**Terminal Block**

The following figure shows the 140CFJ00400 terminal block.



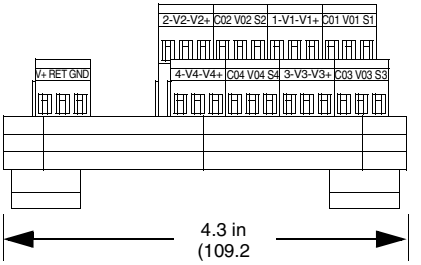

**Application Notes**

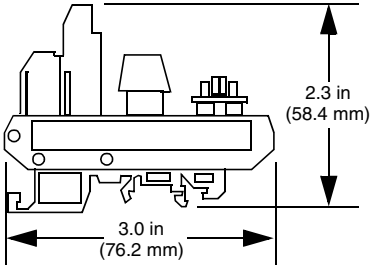
The following are the application notes for the 140CFJ00400 module.

1. **Configuration** – Four analog outputs with a common loop supply. Each point is allocated six terminals.
2. **Compatibility** – This terminal block provides four individually 0.063 A fused connection point sets for the 140ACO02000 analog output module.

**Dimensions**

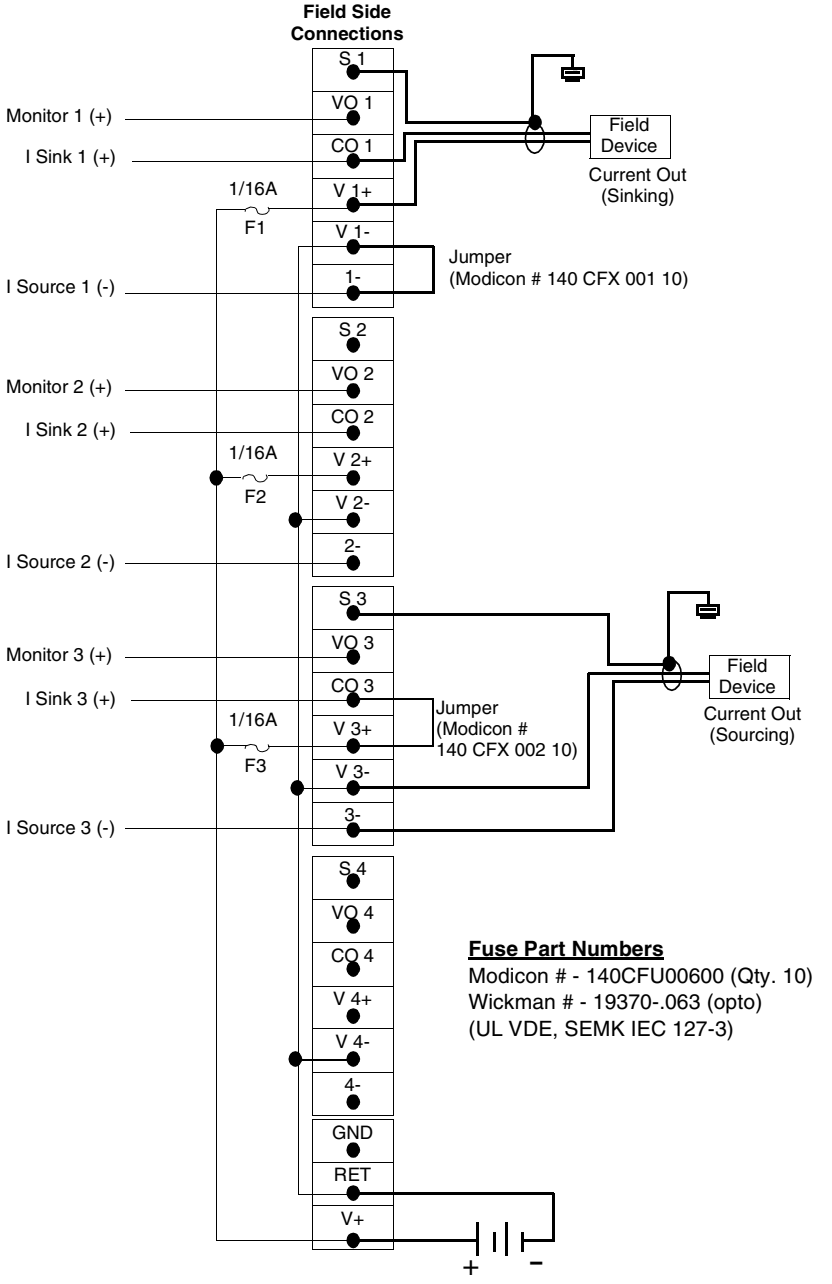
The following figures show the dimensions for the 140CFJ00400 module.



**Wiring Diagram (Source Grounding)**

The following figure shows the wiring for the 140CFJ00400 (source grounding) module.

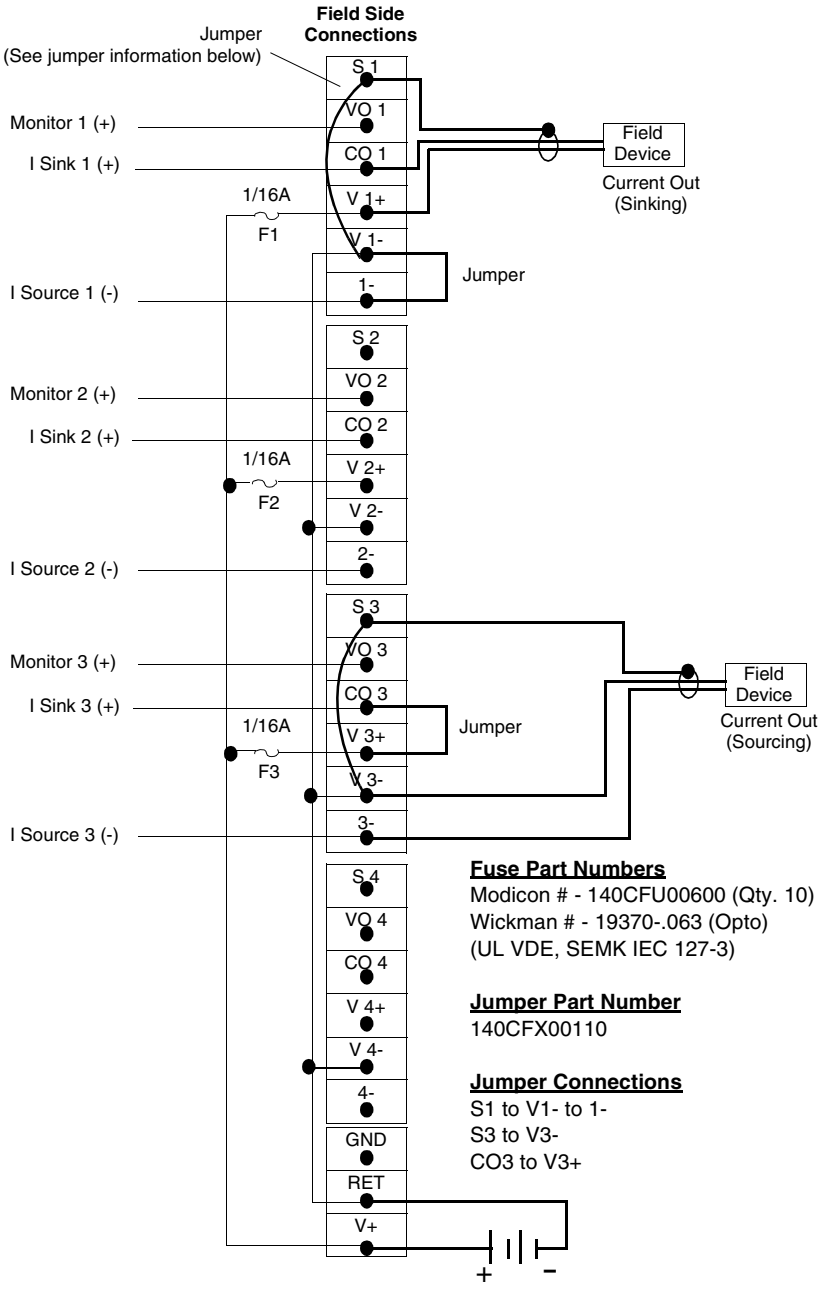



**Fuse Part Numbers**
Modicon # - 140CFU00600 (Qty. 10)
Wickman # - 19370-.063 (opto)
(UL VDE, SEMK IEC 127-3)

**Note:**
1. When using a single power supply, there will be no channel-to-channel isolation of input points.
2. For the required jumper options for the 140ACO02000, see the wiring diagrams in *ACO02000 Wiring Diagram, p. 566*.
3. The GND (ground) terminal point is not connected.

**Wiring Diagram (Instrument Grounding)**

The following figure shows the wiring for the140CFJ00400 (instrument grounding) module.




**Fuse Part Numbers**
Modicon # - 140CFU00600 (Qty. 10)
Wickman # - 19370-.063 (Opto)
(UL VDE, SEMK IEC 127-3)

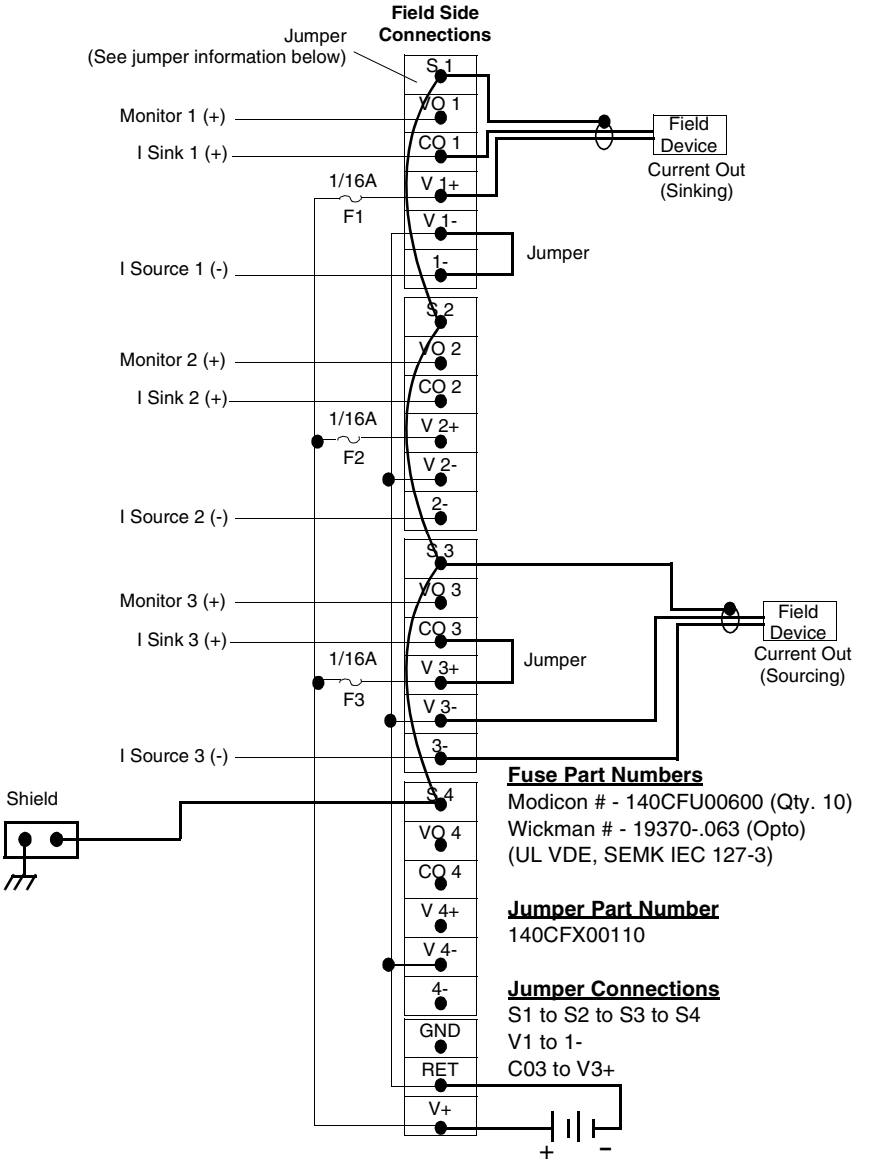
**Jumper Part Number**
140CFX00110

**Jumper Connections**
S1 to V1- to 1-
S3 to V3-
CO3 to V3+

**Note:**
1. When using a single power supply, there will be no channel-to-channel isolation of input points.
2. For the required jumper options for the 140ACO02000, see the wiring diagrams in *ACO02000 Wiring Diagram, p. 566*.
3. The GND (ground) terminal point is not connected.

**Wiring Diagram (Chassis Grounding)**

The following figure shows the wiring for the 140CFJ00400 (chassis grounding) module.




**Note:**

1. When using a single power supply, there will be no channel-to-channel isolation of input points.
2. For the required jumper options for the 140ACO02000, see the wiring diagrams in *ACO02000 Wiring Diagram, p. 566*.
3. The GND (ground) terminal point is not connected.

## 140CFK00400 Quantum CableFast Cabling Block

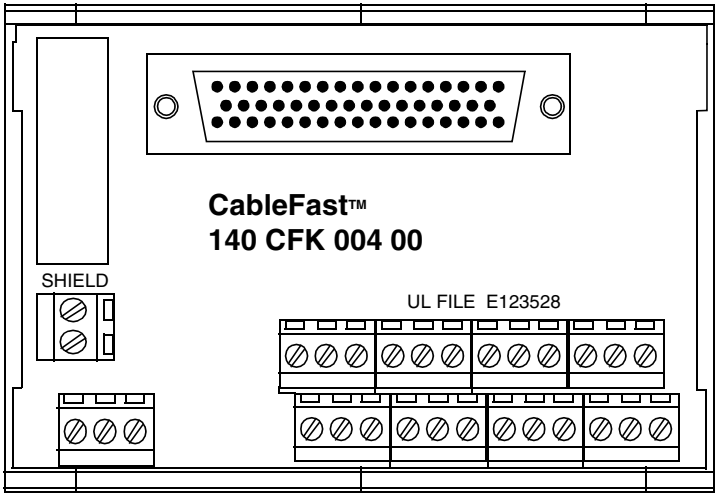
**Overview**

The K block is used for analog outputs. This interface provides plus, minus, shield, and power supply interface for both field and loop power configurations.

See *Features of the CableFast Cabling System, p. 858* for information on common specifications and features of CableFast cabling blocks.

**Terminal Block**

The following figure shows the 140CFK00400 terminal block.



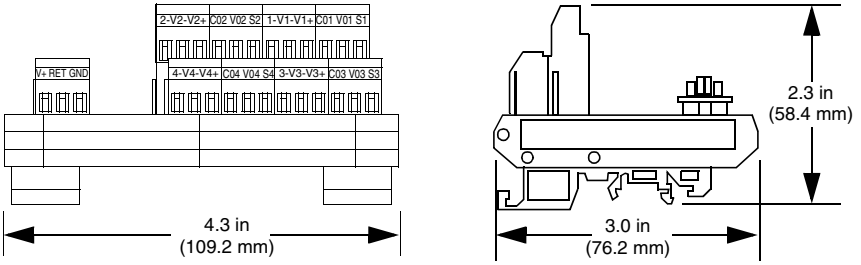

**Application Notes**

The following are the application notes for the 140CFK00400 module.

1. **Configuration** – Four analog outputs with a common loop supply. Each point is allocated four terminals.
2. **Compatibility** – This terminal block provides four individually unfused connection point sets for the 140ACO02000 and 140AVO02000 analog output modules.

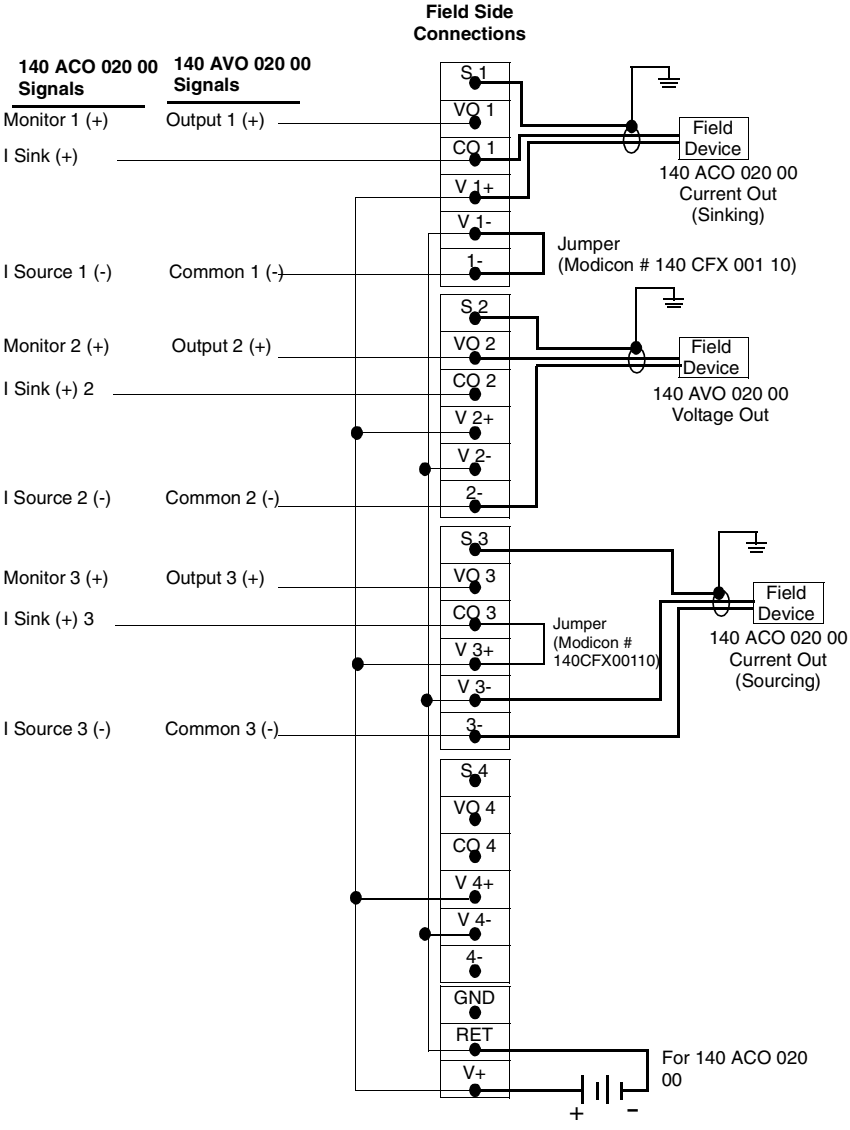
**Dimensions**

The following figures show the dimensions for the 140CFK00400 module.



**Wiring Diagram (Source Grounding)**

The following shows the wiring for the 140CFK00400 (source grounding) module.

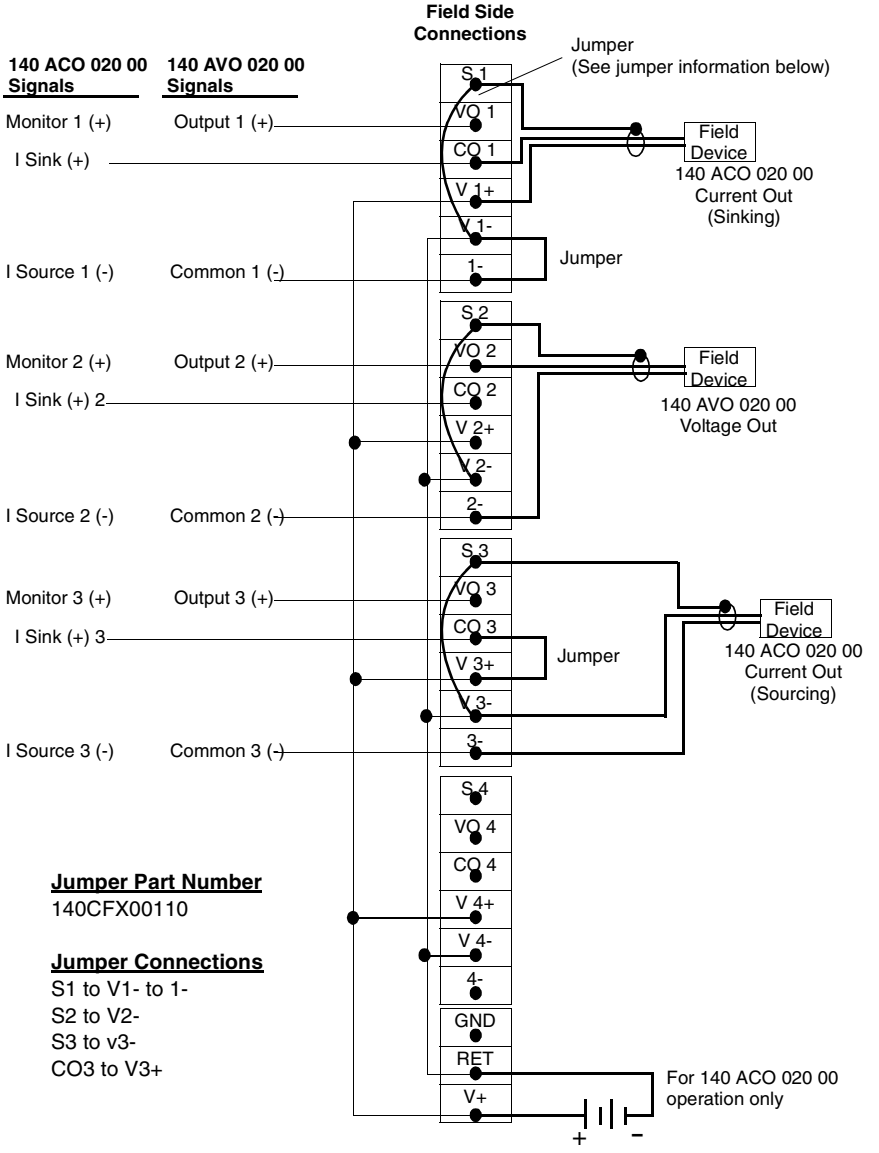


**Note:**

1. When used with the 140AVO02000 analog voltage out module, the master override connections and range select must be made on the Quantum I/O connector.
2. When using a single power supply, there will be no channel-to-channel isolation of input points.
3. For the required jumper options for the 140ACO02000, see wiring diagram in *140ACO02000 Quantum I/O Analog Current Out Module, p. 563*.
4. The GND (ground) terminal point is not connected.

**Wiring Diagram (Instrument Grounding)**

The following figure shows the wiring for the 140CFK00400 (instrument grounding) module.

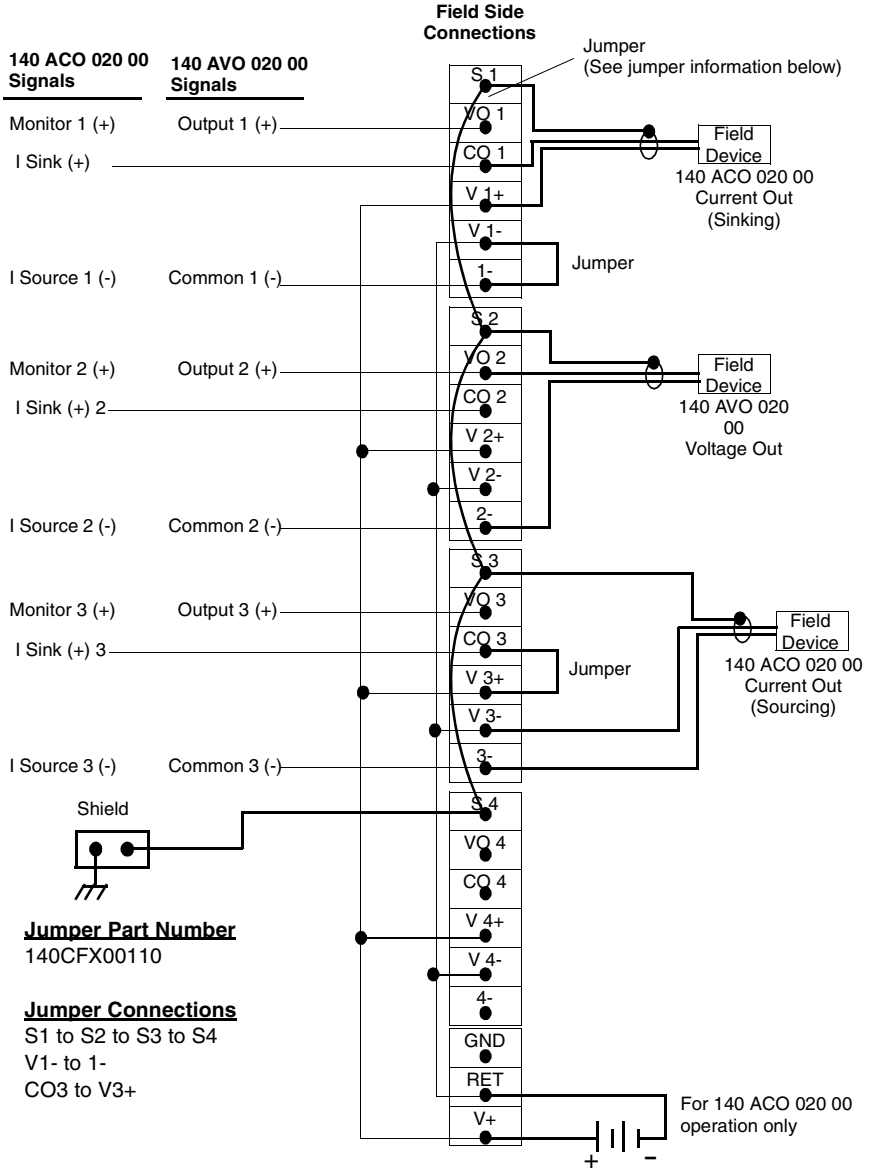


**Note:**

1. When used with the 140AVO02000 analog voltage out module, the master override connections and range select must be made on the Quantum I/O connector.
2. When using a single power supply, there will be no channel-to-channel isolation of input points.
3. For the required jumper options for the 140ACO02000 and the AVO02000, see wiring diagrams in *140ACO02000 Quantum I/O Analog Current Out Module, p. 563* and the *140AVO02000 Quantum I/O Analog Voltage Out Module, p. 573*.
4. The GND (ground) terminal point is not connected.

**Wiring Diagram (Chassis Grounding)**

The following shows the wiring for the 140CFK00400 (chassis grounding) module.



**Note:**

1. When used with the 140AVO02000 analog voltage out module, the master override connections and range select must be made on the Quantum I/O connector.
2. When using a single power supply, there will be no channel-to-channel isolation of input points.
3. For wiring the 140ACO02000 and the 140AVO02000, see the wiring diagrams in *140ACO02000 Quantum I/O Analog Current Out Module, p. 563* and *140AVO02000 Quantum I/O Analog Voltage Out Module, p. 573*.
4. The GND (ground) terminal point is not connected.

## CableFast Cables

**Overview**

This section provides CableFast cable specifications, cable lengths, inner wire color codes (for standard and high power cables), cable selections, and accessories.

**Cable Specifications**

The following table shows the CableFast cable specifications.

| **Cable Specifications** | |
|---|---|
| **Standard Power** | |
| Cable Diameter | 0.43 in. nominal (10.9 mm) |
| Number of Conductors | 8-#20 AWG (0.8 mm), 7/28 tinned annealed copper; semi rigid PVC<br>32-#26 AWG (0.4 mm), 7/34 tinned annealed copper; semi rigid PVC |
| Bend Radius (I.D.) | 0.75 in. min. (19.0 mm) |
| **High Power** | |
| Cable Diameter | 0.55 in. nominal (14.0 mm) |
| Number of Conductors | 8-#18 AWG (1.0 mm), 16/30 tinned annealed copper; semi rigid PVC<br>32-#20 AWG (0.8 mm), 10/30 tinned annealed copper; semi rigid PVC |
| Bend Radius (I.D.) | 1.50 in. min. (38.1 mm) |
| **Common Specifications** | |
| Cable Jacket | Jacket color: black, 0.040 in wall min, flexible PVC |
| Wire Strip Length | 0.32 in. (8 mm) |
| Wire Marking | See the wire color coding table (next page) |
| Wire Rating | 300 V, 105° C UL rated 2517, CSA Type AWM 1/2 FT1 |
| Cable Rating | 300 V, 105° C rated |
| Shielding | Aluminum/polyester tape (aluminum side out) attached at connector body (360°).<br>#22 AWG, 7/30 drain wire.Shield resistance 16.55 Ohms/Mft nominal |
| Agency Approval | UL-758; AWM style 2517 VW-1 and CSA C22:210.2; AWM I/II A/B FT1 |

## Cable Lengths

The following table shows the cable lengths for the CableFast system.

| Cable Lengths | Terminated | | Pigtail |
|---|---|---|---|
| | Standard Power | High Power | High Power |
| 3 ft. (0.91 m) | X | X | |
| 6 ft. (1.82 m) | X | X | X |
| 9 ft. (2.73 m) | X | X | |
| 12 ft. (3.64 m) | X | X | |
| 15 ft. (4.6 m) | | | X |

**Inner Wire Color Codes**

The following table provides the wire color codes for standard power and high power cables.

| Wire/ Pin # | AWG for Standard Power Cable | AWG for High Power Cable | Color | Wire/ Pin # | AWG for Standard Power Cable | AWG for High Power Cable | Color |
|---|---|---|---|---|---|---|---|
| 1 | 26 | 20 | Black | 21 | 26 | 20 | White/ Blue |
| 2 | 26 | 20 | Brown | 22 | 26 | 20 | White/ Violet |
| 3 | 26 | 20 | Red | 23 | 26 | 20 | White/ Gray |
| 4 | 26 | 20 | Orange | 24 | 26 | 20 | White/ Black/ Brown |
| 5 | 26 | 20 | Yellow | 25 | 26 | 20 | White/ Black/ Red |
| 6 | 26 | 20 | Green | 26 | 26 | 20 | White/ Black/ Orange |
| 7 | 26 | 20 | Blue | 27 | 26 | 20 | White/ Black/ Yellow |
| 8 | 26 | 20 | Violet | 28 | 26 | 20 | White/ Black/ Green |
| 9 | 20 | 18 | Black | 29 | 20 | 18 | Yellow |
| 10 | 20 | 18 | Brown | 30 | 20 | 18 | Green |
| 11 | 26 | 20 | Gray | 31 | 26 | 20 | White/ Black/ Blue |
| 12 | 26 | 20 | White | 32 | 26 | 20 | White/ Black/ Violet |
| 13 | 26 | 20 | White/ Black | 33 | 26 | 20 | White/ Black/ Gray |
| 14 | 26 | 20 | White/ Brown | 34 | 26 | 20 | White/ Brown/ Red |

| Wire/ Pin # | AWG for Standard Power Cable | AWG for High Power Cable | Color | Wire/ Pin # | AWG for Standard Power Cable | AWG for High Power Cable | Color |
|---|---|---|---|---|---|---|---|
| 15 | 26 | 20 | White/ Red | 35 | 26 | 20 | White/ Brown/ Orange |
| 16 | 26 | 20 | White/ Orange | 36 | 26 | 20 | White/ Brown/ Yellow |
| 17 | 26 | 20 | White/ Yellow | 37 | 26 | 20 | White/ Brown/ Green |
| 18 | 26 | 20 | White/ Green | 38 | 26 | 20 | White/ Brown/ Blue |
| 19 | 20 | 18 | Red | 39 | 20 | 18 | Blue |
| 20 | 20 | 18 | Orange | 40 | 20 | 18 | Violet |

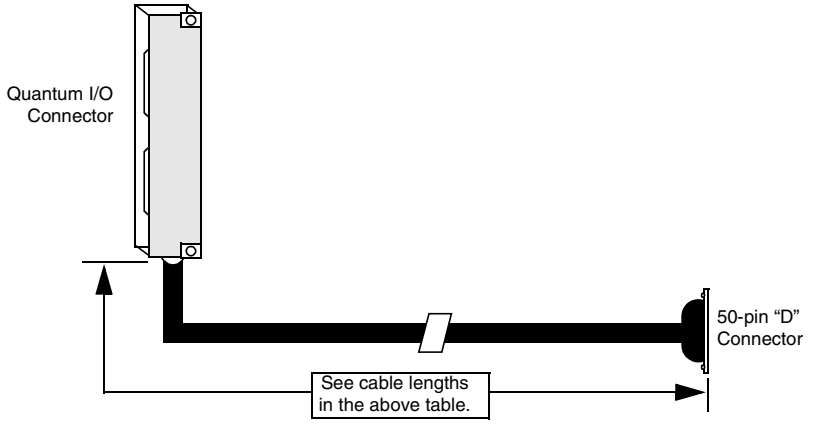
## Cable Selections (XTS)

The following table shows the 140XTS0xx terminated cables.

| Part Number | Cable Type | | Cable Description |
|---|---|---|---|
| | Standard Power | High Power | |
| 140XTS00203 | X | | CableFast system cable with Quantum I/O connector, 3 ft. (0.9 m) and "D" sub connector |
| 140XTS01203 | | X | |
| 140XTS00206 | X | | CableFast system cable with Quantum I/O connector, 6 ft. (1.8 m) and "D" sub connector |
| 140XTS01206 | | X | |
| 140XTS00209 | X | | CableFast system cable with Quantum I/O connector, 9 ft. (2.7 m) and "D" sub connector |
| 140XTS01209 | | X | |
| 140XTS00212 | X | | CableFast system cable with Quantum I/O connector, 12 ft. (3.7 m) and "D" sub connector |
| 140XTS01212 | | X | |

**I/O Connector for Quantum**

The following figure shows the I/O Connector for the Quantum system.



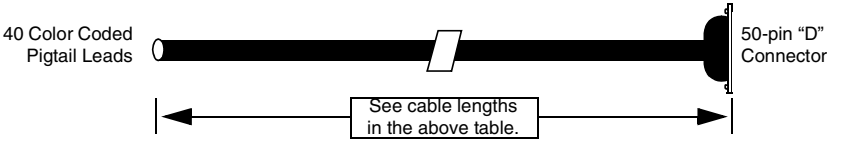

**XCA102xx Pigtail**

The following table shows the 140XCA102xx Pigtail cable description.

| Part Number | Cable Type | | Cable Description |
|---|---|---|---|
| | Standard Power | High Power | |
| 140XCA10206 | | X | CableFast system cable, 6 ft (1.8 m), with "D" sub connector and pigtails |
| 140XCA10215 | | X | CableFast system cable, 15 ft (4.6 m), with "D" sub connector and pigtails |

**Pigtail Leads**

The following figure shows the color coded pigtail leads.



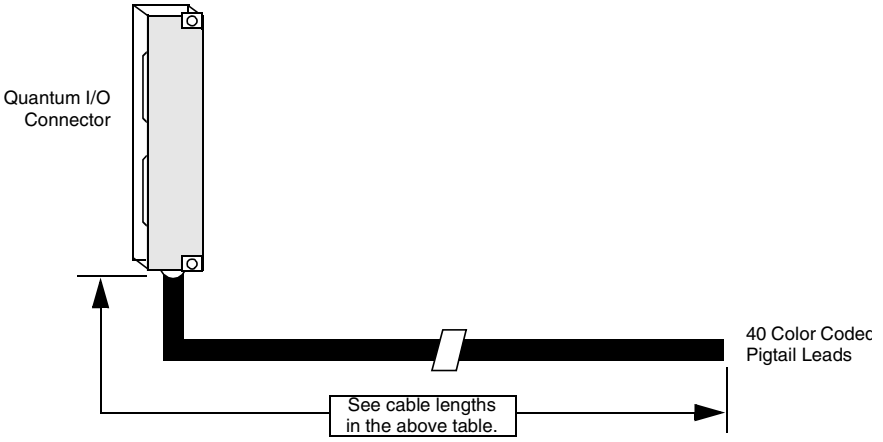
### XTS102xx Pigtail

The following table shows the 140XTS102xx Pigtail cables.

| Part Number | Cable Type | | Cable Description |
|---|---|---|---|
| | Standard Power | High Power | |
| 140XTS10206 | | X | CableFast system cable with Quantum I/O connector, 6 ft. (1.8 m), and pigtail cable |
| 140 XTS10215 | | X | CableFast system cable with Quantum I/O connector, 15 ft. (4.6 m), and pigtail cable |

### I/O Connector for Pigtail Leads

The following figure shows the I/O connector for pigtail leads.



## CableFast Accessories

**Overview**

The following information pertains to the CableFast accessories.

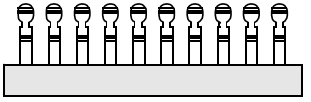
**Accessories**

The following table shows the part numbers and descriptions for CableFast Accessories.

| Part Number | Description | Quantity |
|---|---|---|
| 140CFU40000 | Fuse Kit, Wickmann 4 A | 10 |
| 140CFU08000 | Fuse Kit, Wickmann 0.8 A | 10 |
| 140CFU00600 | Fuse Kit, Wickmann 0.063 A | 10 |
| 140CFX00110 | Terminal Block Common Strip, 10 Position (see below) | 10 |

**Terminal Block Common Strip**

The following figure shows the terminal block common strip.

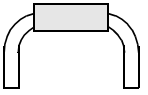


**Jumper, Fuse Replacement**

Fuse replacement information is given in the following table.

| Part Number | Description | Quantity |
|---|---|---|
| 140 CFX 002 10 | Jumper, Fuse Replacement (see below) | 10 |

The following figure shows a jumper.



**Note:** The jumper is used instead of fuses as a disconnect device.